

René Heredia-Nieves
HES Professional



Marathon Oil Company
3172 Highway 22 North
Dickinson, North Dakota 58601
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November 4, 2019

Ms. Claudia Smith
Minor NSR Permitting Coordinator
U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR
Denver, Colorado 80202-1129

Dear Ms. Smith:

Enclosed please find a Part 1 registration form for the Weninger Cox well pad. The wells included on the well pad are listed below.

<u>Facility Name</u>	<u>API Number(s)</u>
Weninger Cox 44-34TFH (existing)	33-061-01887
JWC 44-34H (existing)	33-061-02765
Royal USA 41-3TFH	33-061-04494
Evenson USA 41-3H	33-061-04495
Peterson USA 41-3TFH	33-061-04496

Please do not hesitate to contact me at either of the telephone numbers listed above or by email if you have any questions regarding this registration.

Sincerely,

A handwritten signature in cursive script that reads "René Heredia Nieves".

René Heredia-Nieves

Enclosures



United States Environmental Protection Agency

<https://www.epa.gov/tribal-air/tribal-minor-new-source-review>

April 29, 2019

Part 1: Submit 30 Days Prior to Beginning Construction -- General Facility Information

FEDERAL IMPLEMENTATION PLAN FOR TRUE MINOR SOURCES IN INDIAN COUNTRY IN THE OIL AND NATURAL GAS PRODUCTION AND NATURAL GAS PROCESSING SEGMENTS OF THE OIL AND NATURAL GAS SECTOR

Registration for New True Minor Oil and Natural Gas Sources and Minor Modifications at Existing True Minor Oil and Natural Gas Sources

Please submit information to:

[Reviewing Authority

Address

Phone]

Claudia Smith
Minor NSR Permitting Coordinator
U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR
Denver, CO 80202-1129

A. GENERAL SOURCE INFORMATION (See Instructions Below)

1. Company Name Marathon Oil Company		2. Source Name Weninger Cox well pad	
3. Type of Oil and Natural Gas Operation oil and gas wellsite		4. New Minor Source? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
		5. Minor Source Modification? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
6. NAICS Code 211111		7. SIC Code 1311	
8. U.S. Well ID(s) or API Number(s) [if applicable] 33-061-01887, 33-061-02765, 33-061-04494, 33-061-04495, 33-061-04496			
9. Area of Indian Country Fort Berthold	10. County Mountrail	11a. Latitude 47.848833	11b. Longitude -102.559558

B. CONTACT INFORMATION (See Instructions Below)

1. Owner Name Jeff Parker		Title Operations Manager	
Mailing Address 3172 Hwy 22 N, Dickinson, ND 58601			
Email Address jrparker@marathonoil.com			
Telephone Number (701)456-7500		Facsimile Number (701)456-7525	
2. Operator Name (if different from owner)		Title	
Mailing Address			
Email Address			
Telephone Number		Facsimile Number	
3. Source Contact René Heredia-Nieves		Title HES Professional	
Mailing Address 3172 Hwy 22 N, Dickinson, ND 58601			
Email Address rheredianiev@marathonoil.com			
Telephone Number (701)456-8538		Facsimile Number (701)456-7525	

4. Compliance Contact Jeff Parker		Title Operations Manager
Mailing Address 3172 Hwy 22 N, Dickinson, ND, 58601		
Email Address jrpark@marathonoil.com		
Telephone Number (701)456-7500	Facsimile Number (701)456-7525	

C. ATTACHMENTS

Include all of the following information as attachments to this form:

- ☒ Narrative description of the operations.
- ☒ Identification and description of all emission units and air pollution generating activities (with the exception of the exempt emissions units and activities listed in §49.153(c).
- ☒ Identification and description of any air pollution control equipment and compliance monitoring devices or activities that are expected to be used at the facility.
- ☒ Estimated operating schedules.
- ☒ If satisfying the requirements under §49.104(a)(1), documentation that another federal agency has complied with its requirements under the Endangered Species Act (ESA) and the National Historic Preservation Act (NHPA) when authorizing the activities for the facility/activity covered under this registration. The appropriate documents shall clearly show that the other federal agency had met its obligations under both the ESA and NHPA. A simple reference to a Record of Decision or other final decision document will not be acceptable. Examples of acceptable documentation would be a letter from the U.S. Fish and Wildlife Service field office (for ESA) or a historic preservation office (for NHPA) stating they agree with the assessment conducted by the other federal agency for the subject project and that the requirements of those statutes have been met. The documentation shall be submitted within the Part 1 registration.
- ☐ If satisfying the requirements under §49.104(a)(2), the letter provided by the Reviewing Authority indicating satisfactory completion of the specified screening procedures to address threatened or endangered species and historic properties. The documentation shall be submitted under the Part 1 registration. (The procedures are contained in the following document: "Procedures to Address Threatened or Endangered Species and Historic Properties for the Federal Implementation Plan for True Minor Sources in Indian Country in the Oil and Natural Gas Production and Natural Gas Processing Segments of the Oil and Natural Gas Sector," <https://www.epa.gov/tribal-air/tribal-minor-new-source-review>).
- ☐ Other.

Instructions for Part 1

Please answer all questions. If the item does not apply to the source and its operations write "n/a". If the answer is not known write "unknown".

A. General Source Information

1. Company Name: Provide the complete company name. For corporations, include divisions or subsidiary name, if any.
2. Source Name: Provide the source name. Please note that a source is a site, place, or location that may contain one or more air pollution emitting units.
3. Type of Operation: Indicate the generally accepted name for the oil and natural gas production or natural gas processing segment operation (e.g., oil and gas well site, tank battery, compressor station, natural gas processing plant).
4. New True Minor Source: [Per Federal Indian Country Minor New Source Review Rule, 40 CFR 49.153].
5. True Minor Source Modification: [Per Federal Indian Country Minor New Source Review Rule, 40 CFR 49.153].
6. North American Industry Classification System (NAICS): The NAICS Code for your oil and natural gas source can be found at the following link for North American Industry Classification System:
<http://www.census.gov/eos/www/naics/>.
7. Standard Industrial Classification Code (SIC Code): Although the new NAICS code has replaced the SIC codes, much of the Clean Air Act permitting processes continue to use these codes. The SIC Code for your oil and natural gas source can be found at the following link for Standard Industrial Classification Codes:
http://www.osha.gov/pls/imis/sic_manual.html.
8. U.S. Well ID or API Number: Unique well identifier as assigned by the Federal or State oil and gas regulatory agency with primacy, using the American Petroleum Institute (API) Standard for number format (pre-2014) or the Professional Petroleum Data Management (PPDM) Association US Well Number Standard (2014-present). Provide IDs for all oil and natural gas production wells associated with the facility, if applicable. May not be applicable for downstream production sources, such as compressor stations.
9. Area of Indian Country: Provide the name of the Indian reservation within which the source is operating.
10. County: Provide the County within which the source is operating.
11. Latitude & Longitude (11a. and 11b.): Provide latitude and longitude location(s) in decimal degrees, indicating the datum used in parentheses. These are GPS (global positioning system) coordinates. This information should be provided in decimal degrees with 6 digits to the right of the decimal point, indicating the datum used in parentheses (i.e., NAD 27, NAD 83, WGS 84 – WGS 84 is preferred over NAD 27).

B. Contact Information

Please provide the information requested in full.

1. Owners: List the full name (last, middle initial, first) of all owners of the source.
2. Operator: Provide the name of the operator of the source if it is different from the owner(s).
3. Source Contact: The source contact must be the local contact authorized to receive requests for data and information.
4. Compliance Contact: The compliance contact must be the local contact responsible for the source's compliance with this rule. If this is the same as the Source Contact please note this on the form.

C. Attachments

The information requested in the attachments will enable the U.S. Environmental Protection Agency (EPA) to understand the type of oil and natural gas source being registered.

Disclaimers:

The public reporting and recordkeeping burden for this collection of information is estimated to average 6 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Information in these forms submitted in compliance with the final Federal Indian Country Minor New Source Review rule may be claimed as confidential. A company may assert a claim of confidentiality for information submitted by clearly marking that information as confidential. Such information shall be treated in accordance with EPA's procedures for information claimed as confidential at 40 CFR part 2, subpart B, and will only be disclosed by the means set forth in the subpart. If no claim of confidentiality accompanies the report when it is received by EPA, it may be made public without further notice to the company (40 CFR 2.203).

C. Attachments

☐ **Narrative description of the operations:**

The Weninger Cox well pad includes the following wells: Weninger Cox 44-34TFH, JWC 44-34H, Royal USA 41-3TFH, Evenson USA 41-3H and Peterson USA 41-3TFH. The Weninger Cox well pad is owned and operated by Marathon Oil Company (Marathon) and located on the Ft. Berthold Indian Reservation in Mountrail County, North Dakota. This oil and gas production facility will consist of multiple wells and associated onsite equipment (discussed in detail below).

Produced fluid from the formation, initially an emulsion comprised of produced oil, natural gas, and produced water flows or is pumped from the well to a heater treater. The oil is then separated from the natural gas and produced water. Oil and produced water transfer to above-ground storage tanks while natural gas goes to sales or is combusted by a control device with a 98% minimum destruction efficiency. This site may have compressors in order to supply high-pressure gas for artificial lift as well as to compress unsold gas and sell it to a secondary pipeline. This site, alternatively, may contain natural gas liquid (NGL) recovery equipment to remove NGLs from gas prior to sales or combustion. Produced water will be loaded into tanker trucks for off-site disposal. The oil will be loaded into tanker trucks for sale or pass through a Lease Automated Custody Transfer (LACT) unit prior to shipment via pipeline. Finally, storage tanks will utilize a control device with a 98% minimum destruction efficiency to reduce emissions from these tanks.

☐ **Identification and description of all emission units and air pollution generating activities; include portable equipment:**

The following is a narrative of potential emission equipment that may be used at this facility. Site-specific equipment for Marathon facilities may vary depending on gas sales and equipment placement. Please refer to Table 1 (see below) and Attachment 1 for equipment specific to the location.

1. Electrically-operated pumping units extract produced fluid from the formation. The fluid leaves the production well casing head via an underground flowline and enters a heater treater for separation. The heater treater is equipped with a 500,000 to 1,500,000 Btu/hr burner fueled by natural gas from the well or liquefied petroleum gas (LPG) from a pressurize storage tank. Production from locations where wells share common ownership may be commingled. Under this scenario, multiple heater treaters may be used to determine production rates of individual wells for accounting purposes.
2. Natural gas produced from the heater treater is routed to the heater treater burner to provide its fuel or to control devices with a 98% destruction efficiency equipped with a continuous automatic igniter and pilot flame with a thermocouple. This device is monitored visually (daily) or via the Supervisory Control and Data Acquisition (SCADA) network. The heater treater gas at this facility may be flared temporarily until gas sales line installation is complete. Once gas sales line installation is complete, the treater gas is routed to it. If the temperature of the sales gas is too high, the site may require the use of one or more natural gas-driven coolers to meet sales temperature specification. The heater treater control device remains in place but will only be used in the event of an upset condition, including pipeline curtailment. In the event of an upset condition, the heater treater is

equipped with a control device with a 98% minimum destruction efficiency to minimize emissions.

3. Produced oil from the heater treater is routed to multiple vertical 625-barrel above ground fixed-roof storage tanks, where it is stored prior to tanker truck loading via submerged fill lines or custody transfer via a LACT unit. Emissions of regulated air pollutants (i.e., Volatile Organic Compounds (VOCs) and Hazardous Air Pollutants (HAPs)) from working/breathing/flash losses are routed to a control device with a 98% minimum destruction efficiency equipped with a continuous automatic igniter and pilot flame with a thermocouple. This device is monitored visually (daily) or via SCADA. Individual produced oil storage tanks may be subject to 40 CFR 60, subpart OOOOa (NSPS OOOOa) because VOC emissions from these tanks exceed the six tons per year (TPY) per tank threshold (40 CFR 60.5395).
4. Produced water is routed from the heater treater to vertical 625-barrel above ground fixed-roof storage tanks, where it is stored prior to tanker truck loading. Emissions from produced water tanks are routed to the same control device with a 98% minimum destruction efficiency equipped with a continuous automatic igniter and pilot flame with a thermocouple. This device is monitored visually (daily) or via SCADA. Produced water storage tanks are not subject to NSPS OOOOa because emissions from these tanks do not exceed the six TPY of VOC per tank threshold (40 CFR 60.5395); however, tanks share the same vent collection system as the oil tanks and therefore may be subject to the rule.
5. Emissions from oil tanker truck loading are evaluated in the attached calculation spreadsheet. There are no emission from oil tanker truck loading if the facility has a LACT. Produced water loading emissions are assumed to be negligible.
6. If additional separation is necessary to meet buyer specifications, a recirculation pump is used to recirculate produced oil from storage tanks to the heater treater. This pump is powered by on-site electrical power or a gasoline-powered spark ignition (SI) reciprocating internal combustion engines (RICE) producing eight horsepower (hp). Each SI RICE used is manufactured after July 1, 2008 and certified in accordance with the requirements for new non-road SI engines (40 CFR Part 90) and is operated in accordance with the manufacturer's instructions (40 CFR 60.4243(a)(1)). Additionally, each SI RICE is subject to the maintenance and recordkeeping requirements for SI RICE in 40 CFR 63, subpart ZZZZ effective October 19, 2013.
7. This facility currently has multiple pneumatic controllers on-site. Marathon uses intermittent bleed pneumatic devices powered by pressurized natural gas for flow control devices and for maintaining process conditions such as liquid level, pressure, delta-pressure, and temperature. These devices are snap-acting or throttling devices that discharge the full volume of the actuator intermittently when control action is necessary but do not bleed continuously. These pneumatic control intermittent devices vent less than six scf/h and are not subject to NSPS OOOOa.
8. The well pad site may have one or more generators onsite to provide power to facility equipment. For the purpose of this application, calculations were prepared assuming generators operate for 8,760 hours per year. Once the site is connected to electrical power, generators are removed from the site. Generator engines may be fueled by

natural gas or propane and are SI RICE, manufactured after July 1, 2008, certified in accordance with the requirements for new non-road SI engines (40 CFR Part 90), operated in accordance with the manufacturer's instructions (40 CFR 60.4243(a) (1)), and subject to the maintenance and recordkeeping requirements for SI RICE in 40 CFR 63, subpart ZZZZ effective October 19, 2013.

9. The well pad may have one or more natural-gas driven compressors on-site to increase the pressure of produced gas for use in artificial lift or secondary sales. These compressors are not yet selected; therefore, specific information regarding the emissions expected from these units are not included in this application.

☐ **Identification and description of any existing air pollution control equipment and compliance monitoring devices or activities:**

Emission Source	Emission Controls	Control Efficiency	Monitoring Type
Produced Oil/Produced Water Storage Tanks	Destruction efficiency control device(s) See Footnote 1 below.	98%	Visually by operator (daily) or via SCADA
Heater Treater Produced Natural Gas	Destruction efficiency control device See Footnote 2 below.	98%	Visually by operator (daily) or via SCADA
Heater Treater Fuel Gas	See Footnote 3 below.	0% (uncontrolled)	See Footnote 3
RICE Engine	See Footnote 4 below	0% (uncontrolled)	See Footnote 3
Truck Loadout (Produced oil and produced water)	Submerged Fill	40%	Viewpoint Program oil production rates See attached calculations (Attachment 1)
Well Pad Site Generator	See Footnote 4 below	See Footnote 4	See Footnote 4
Pneumatic Controllers	None (uncontrolled)	N/A	---

Footnote 1: The 98% control device usage is noted here, so that use of either a combustor or utility flare to control tank emissions is acceptable on any location. Reliability and operational issues with combustors have resulted in re-evaluation of their use. It is written as such here for the flexibility to replace combustors with flares as needed.

Footnote 2: The Steffes SHC-6, SHP- 6, and SVG-3B4 have an actual DRE of 99%. This destruction efficiency is based on a Passive Fourier Transform Infrared (PFTIR) study conducted by Sage Environmental Consulting LP and its subcontractor, IMACC, LLC. The following operating conditions from this study were identified by Steffes and allow flare models SHC-6, SHP- 6, and SVG-3B4 to achieve destruction efficiencies of 99% or greater.

- Flares must be installed in accordance with Steffes requirements.
- Flare must be maintained in accordance with Steffes requirements.
- Flows to flare must be within Steffes requirements identified for the flare tip being utilized.
- Smokeless operation of the flare per EPA Method 22 requirements must be confirmed.
- Net heating value of flared gas must be greater than 1,055 BTU/scf.
- Knockouts must be properly designed and maintained to prevent liquid from building up in the pipe or being sent through the flare.

Marathon intends to operate high pressure flares in accordance with the Steffes guidelines provided above to achieve destruction efficiencies of 99% or greater.

Footnote 3: The heater treater burner is controlled by a Burner Management System which regulates the flow of fuel gas to the burner to achieve a temperature in the vessel within the desired operational parameters.

Footnote 4: EPA certified engines, Catalytic Converter or Oxidizers if required by NSPS JJJJ.

☐ **Type and amount of fuels used:**

Field gas (produced natural gas) is used at this location to fuel the heater treater burner. Field gas not utilized in the burner is routed to control devices with a 98% minimum destruction efficiency when a gas sales line is unavailable. The contents of the field gas are included in the calculation spreadsheets provided in Part 2. The volume of gas utilized in the burner varies depending on well flow rate, wellhead temperature, and the desired operating temperature range.

☐ **Type of raw materials used:**

The produced fluid is initially an emulsion comprised of produced oil, natural gas, and produced water. Please see the narrative above for a further description of the process.

☐ **Production Rates:**

Production rates vary depending on the facility. The initial production rates are normally higher and decline over time. Production from the first thirty days is utilized with a decline factor of 0.5 to determine annual production rates for new wells. For facilities with wells flowing for more than one year, the most recent thirty days of production are averaged, and a decline factor of 1.0 (no decline) is used in the emission calculations (if applicable). These calculations are consistent with the Bakken Pool Air Pollution Control Permitting and Guidance as published by the North Dakota Department of Health.

☐ **Operating Schedules:**

The Weninger Cox well pad is anticipated to operate 24-hours per day, 7-days per week, and 52-weeks per year for a total of 8,760 hours per year. Exceptions to this operating schedule may include but are not limited to, shutdowns associated with extreme weather conditions, scheduled maintenance, operation updates, and temporary shut-in (if required).

☐ **Any existing limitations on source operation affecting emissions or any work practice standards, where applicable, for all regulated NSR pollutants at your source.**

Some Marathon emissions for this facility may be regulated under 40 CFR part 60, subpart OOOOa. This rule was published in the Federal Register on June 3, 2016, and not all parts of the rule are effective; however, Marathon will comply with the applicable requirements when they become effective. In accordance with this rule, controls to reduce VOC emissions by 95% for storage tanks emitting six tons or more per year of VOC may be required. This reduction requirement applies to tanks used in oil and gas production, natural gas processing, and transmission and storage. The calculations for this facility indicate that with controls, the emissions from tanks may exceed the six-ton per year per tank threshold. Additionally, the New Source Performance Standards will require a Leak Detection and Repair Program to reduce emissions from fugitive emission sources.

§49.104(a)(1) Requirements

**United States Department of the Interior
Bureau of Land Management
North Dakota Field Office**

Finding of No Significant Impact

For

Marathon Oil Company (Marathon)

Royal USA 41-3TFH, Peterson USA 41-3TFH, and Evenson USA 41-3H
SESE Section 34, T151N, R93W

Allen Horn USA 11-2H, Horn USA 21-2H, Julia Horn USA 11-2TFH, and
Lottio Horn USA 21-2TFH
Lot 3 Section 2, T150N, R93W

Mountrail County ND

DOI-BLM-MT-C030-2019-0093-DNA

Introduction

Marathon Oil Company (Marathon) has submitted Applications for Permits to Drill (APDs) proposing construction, drilling, and operation of seven oil and gas wells atop of two multiple well locations in Mountrail County, North Dakota. The proposed wells would overly private minerals with well bores drilled horizontally, and penetrating Indian leases 14-20-A04-9469 and 14-20-A04-8300.

The Determination of NEPA Adequacy (DNA) for the Royal USA 41-3TFH, Peterson USA 41-3TFH, and Evenson USA 41-3H (14-20-A04-9469), and Allen Horn USA 11-2H, Horn USA 21-2H, Julia Horn USA 11-2TFH, and Lottio Horn USA 21-2TFH (14-20-A04-8300) wells (DOI-BLM-MT-C030-2019-0093-DNA), prepared by the Bureau of Land Management (BLM), North Dakota Field Office (NDFO), depicts the operators proposed action and the referenced Environmental Assessments (DOI-BLM-MT-C030-2017-0077-EA, DOI-BLM-MT-C030-2016-0185-EA and DOI-BLM-MT-C030-2018-0072-EA) depict the environmental effects available at the time of this analysis.

The DNA shows that the analyzed actions would have no significant effects and assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions.

Finding of No Significant Impact Determination

Based upon a review of the DNA and the supporting documents, I have determined that the project is not a major federal action and will not significantly affect the quality of the human

environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27, and do not exceed those effects described in the North Dakota Resource Management Plan, which was approved on April 22, 1988, as amended. Therefore, an environmental impact statement is not needed. This finding is based on the context and intensity of the project as described below.

Context

The projects' site-specific actions directly impact a total of approximately 9.25 acres of disturbance in Mountrail County, ND which in and of itself does not have international, national, regional, or state-wide importance. The project areas include producing oil and gas wells.

Intensity

The following discussion is organized around the Ten Significance Criteria described in 40 CFR 1508.27 and incorporated into resources and issues considered (includes supplemental authorities Appendix 1 H-1790-1) and supplemental Instruction Memorandum, Acts, regulations and Executive Orders. The following have been considered in evaluating intensity for this proposal.

1. Impacts that may be both beneficial and adverse.

The proposed actions would impact resources as described in the referenced Environmental Assessments (EAs). Mitigation measures to minimize or eliminate adverse impacts were identified in the analysis and were included as Conditions of Approval with the approved permits. The EA also disclosed beneficial impacts from similar proposed projects, such as the potential to bring additional oil and gas into the market place and increase revenues to federal and state and local governments, and to obtain scientific data of the local geology, and to increase the knowledge base of the mineral resources potential.

2. The degree to which the selected alternative will affect public health and safety.

No aspect of the selected alternative would have an effect on public health and safety. The selected alternative minimizes adverse impacts to public health and safety by project design and additional mitigation measures. Implementation of H₂S Safety Measures will be required if H₂S is encountered in excess of 100 ppm in the gas stream, the operator shall immediately ensure control of the well, suspend drilling ahead operations (unless detrimental to well control), and obtain materials and safety equipment to bring the operations into compliance with applicable provisions of Onshore Order No. 6.

3. Unique characteristics of the geographic area such as proximity of historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

The location of the proposed well pad has been subject to cultural resource inventories. The historic and cultural resources of the area has been reviewed by an archeologist and there are no concerns at this time.

There are no effects on park lands, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

No unique or appreciable scientific controversy has been identified regarding the effects of the Proposed Action. The environmental analysis from the referenced EAs did not show any highly controversial effects to the quality of the human environment.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The analysis did not show any unique or unknown risks to the human environment. The project is not unique or unusual in the area. Oil and gas exploration has been ongoing in the region for many years, during which the BLM and the State of North Dakota have approved similar actions in the same geographic area. The environmental effects to the human environment are analyzed in the referenced EAs. There are no known predicted effects on the human environment that are considered to be highly uncertain or involve unique or unknown risks.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

The proposed action was considered by BLM within the context of past, present, and reasonably foreseeable future actions. The action would not establish a precedent, since the project area is in a developed oil and gas field. Any future actions would be subject to the NEPA process.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

Effects are expected to be similar to effects from previous similar projects. Considering mitigation, cumulatively significant impacts are not anticipated. A disclosure of the effects of the project are contained in the referenced EAs.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources.

The project will not affect districts, sites, highways, structures, or other objects listed on or eligible for listing in the National Register of Historic Places, nor would it cause loss or destruction of significant scientific, cultural, or historical resources. No cultural resources will be impacted.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

The project was found to have a “no affect” determination on the listed species for Mountrail County, ND.

10. Whether the action threatens a violation of Federal, State, Tribal or Local law or requirements imposed for the protection of the environment.

The project does not violate any known Federal, State, Local or Tribal law or requirement imposed for the protection of the environment. It is the responsibility of the operator to obtain all necessary permits, and to comply with all applicable federal, state, and tribal laws, rules, policies, regulations, and agreements. Furthermore, the project is consistent with applicable BLM plans, policies, and programs.

LOREN
WICKSTROM

Digitally signed by LOREN
WICKSTROM
Date: 2019.03.18 16:14:45 -06'00'

Loren C. Wickstrom
Field Manager, NDFO

U.S. Department of the Interior
Bureau of Land Management (BLM)
North Dakota Field Office

Documentation of NEPA Adequacy
DOI-BLM-MT-C030-2019-0093-DNA
March 2019

Marathon Oil Company (Marathon)

Royal USA 41-3TFH, Peterson USA 41-3TFH, and Evenson USA 41-3H
SESE Section 34, T151N, R93W

Allen Horn USA 11-2H, Horn USA 21-2H, Julia Horn USA 11-2TFH, and
Lottio Horn USA 21-2TFH
Lot 3 Section 2, T150N, R93W

Mountrail County ND

14-20-A04-9469 and 14-20-A04-8300

Proposed Action and any Applicable Mitigation Measures

Marathon Oil Company (Marathon) has submitted Applications for Permits to Drill (APDs) proposing construction, drilling, and operation of seven oil and gas wells atop of two multiple well locations in Mountrail County, North Dakota. Marathon proposes to drill the Royal USA 41-3TFH, Peterson USA 41-3TFH, Evenson USA 41-3H, Allen Horn USA 11-2H, Horn USA 21-2H, Julia Horn USA 11-2TFH, and Lottio Horn USA 21-2TFH oil and gas wells within the exterior boundary of the Fort Berthold Indian Reservation (FBIR), Mountrail County, ND. The proposed wells would be drilled from privately owned surface overlying private minerals with well bores drilled horizontally, and penetrating an Indian lease. The proposed action is similar to that covered in the Environmental Assessments for FBIR Programmatic EA ([DOI-BLM-MT-C030-2018-0072-EA](#)), Marathon Irish Pad and Waltom Pad oil and gas wells ([DOI-BLM-MT-C030-2017-0077-EA](#)), and Marathon Brandt USA 44-34TFH and Loftquist USA 34-34TFH Oil and Gas Infill Wells ([DOI-BLM-MT-C030-2016-0185-EA](#)). The proposed action, applicant committed BMPs, and mitigation measures are described in the EAs. The BMPs and Conditions of Approval are also attached to this DNA (Attachments 1 and 2).

Well Site Construction

Surface and subsoil materials in the immediate project area will be used for construction of the well pads and access roads. Scrapers, bulldozers, road blades and other heavy equipment will be used to remove vegetation and topsoil then stockpile for interim or final reclamation. A level working surface will be constructed by cutting subsoil from back slopes and pushing it over to fill low areas. A BLM Right-of-Way (ROW) would not be required for the proposed well pads and access roads.

A 24" berm would be installed along the top of the fill slope to act as a tertiary berm and prevent fluids from migrating off of the well pad location. A water diversion would be installed along the top of the cut slopes to allow precipitation to flow around the pad and reduce the amount of run-on to the pad surface. All drainage ditches and culverts would be kept clear, free-flowing and maintained in working condition throughout the life of the well pad. The storm water management systems and associated culverts and cattle-guards would be maintained in accordance with the construction diagrams in the APD. Erosion controls, fiber blankets, straw waddles, check dams, and rip rap as needed would be installed as needed and maintained throughout the life of the well pad.

A new well pad, access road and flowline are planned for the off unit Royal Pad, Royal USA 41-3TFH, Peterson USA 41-3TFH, and Evenson USA 41-3H, wells. The well pad and access road dimensions are listed in Table 1. The largest cut slope will be approximately 16.8' and the largest fill slope approximately 5.2'. The flowline would be four inches in diameter, be buried a minimum of four feet below grade in a trench, and transport emulsion from the three wells to the tank battery constructed on the existing Wenninger-Cox well pad. The trench would be constructed to approximately 15 feet wide and approximately 875 feet in length. The surface disturbance from the flowline would be approximately 0.31 acres. Total surface disturbance for this proposal would be 4.0 acres.

The existing Kimball 14-35TFH fee well pad currently houses four fee wells and the Gladys USA 21-2H federal well. The area of interim reclamation completed after the Gladys well was drilled would be removed from reclamation and placed back into the working pad to drill the four federal infill wells, Allen Horn USA 11-2H, Horn USA 21-2H, Julia Horn USA 11-2TFH, and Lottio Horn USA 21-2TFH (Table 1). The area to be removed from interim reclamation is approximately 5.25 acres. The two dry cuttings pits located on the south side of the pad would be excavated, the contents removed and hauled off to a disposal site permitted by the State of North Dakota to receive the waste. Clean fill material would be transported to the site and used to fill in the open pits. This area would undergo compaction to provide a solid working surface for drilling and completions activities. Two flares and a tank battery would be constructed on the working surface removed from reclamation; however, no facilities are planned to be sited on either of the reclaimed pits. No new or additional surface disturbance is planned beyond the original well pad construction footprint. No new surface disturbance is planned for the access road which would be utilized "as is".

Table 1: Proposed well and associated disturbance acreage.

Well Name and Number	Surface Owner	Well Pad	Access Road	Flowline
Royal USA 41-3TFH	Private	Royal Pad	302' x 50'	15' x 875'
Peterson USA 41-3TFH		520' x 280'	0.35 acres	0.31 acres
Evenson USA 41-3H		3.34 acres		
Allen Horn USA 11-2H	Private	Gladys Pad	Existing	
Horn USA 21-2H		5.25.acres IR	0.0 acres	
Julia Horn USA 11-2TFH		removed to original		
Lottio Horn USA 21-2TFH		pad footprint		

Well Site Drilling

The drilling operations would start upon receipt of an approved application for permit to drill, and would take approximately 45 days per well after spudding, followed by additional time for well completion and installation of production facilities. The proposed wells would be horizontally drilled with a closed loop system to the Bakken Formation (Table 2).

Table 2. Downhole information for proposed well.

Well Identification	Measured Depth (ft)	Surface Casing (9 5/8") depth (ft)
Royal USA 41-3TFH	21,191	2,050
Peterson USA 41-3TFH	21,133	2,050
Evenson USA 41-3H	21,067	2,050
Allen Horn USA 11-2H	21,177	2,100
Horn USA 21-2H	21,119	2,100
Julia Horn USA 11-2TFH	21,200	2,100
Lottio Horn USA 21-2TFH	21,116	2,100

All depths are approximations.

The surface casing shall be set and cemented back to the surface. The wells would then be drilled below the casing. The operator does not anticipate Hydrogen Sulfide gas to be encountered but has submitted an H₂S Contingency Plan. An appropriately sized Blowout Preventer (BOP) would be used to control the wells and prevent an accidental release of hydrocarbons or salt water into the environment.

A fresh water based mud system would be used while drilling down to surface casing setting depth, and an invert mud system (brine or oil based) would be used for drilling the remaining vertical section and the horizontal section of the wells. The wells would be fracture stimulated and completed for production if economically recoverable quantities of oil are found.

At the drilling location, drill cuttings would be stored in three sided tanks on location prior to being transported offsite to an approved disposal facility. Disposal of all solids and liquids (drilling fluids/cuttings, produced water, trash, sewage and chemicals) will meet all state, federal and county requirements. Produced fluids would be placed in test tanks on location. A berm would be provided around the test tanks to serve as secondary containment.

The wells would be drilled and completed in full compliance with all applicable laws, regulation (43 CFR 3100), *Onshore Oil and Gas Orders*, the Application for Permit to Drill (APD), and any Conditions of Approval.

Well Site Completion

Bakken wells typically undergo fracture stimulation as part of the well completion process. Fracture stimulation (i.e., hydraulic fracturing or “fracing”) is a process used to maximize the extraction of underground resources by allowing oil or natural gas to move more freely from the rock pores to production wells that brings the oil or gas to the surface. The hydraulically created fracture acts as a conduit in the rock formation, allowing oil or gas to flow more freely through the fracture system, and to the wellbore where the oil or gas is produced to the surface.

To create or enlarge fractures, fluid comprised typically of water and additives is pumped into the productive formation at a gradually increasing rate and pressure. Hydraulic fracturing fluid is approximately 98 percent water and propping agents (proppant), such as sands with the remainder being chemical additives. Chemicals used in stimulation fluids include acids, friction reducers, surfactants, potassium chloride (KCl), gelling agents, scale inhibitors, corrosion inhibitors, antibacterial agents, and pH adjusting agents and typically comprise less than 2% of the total fluid. When the pressure exceeds the rock strength, the fluids create or enlarge fractures that can extend several hundred feet away from the well. As the fractures are created, a propping agent (usually sand) is pumped into the fractures to keep them from closing when the pressure is released. After fracturing is completed, the majority of the injected fracturing fluids returns to the wellbore and is reused or disposed of at an approved disposal facility.

A typical fracture stimulation technique involves 20-30 stages which partition the wellbore into segments which are each separately fracture stimulated. This allows for more efficient use of frac fluid and proppant and a more evenly distributed treatment of the full length of the wellbore. This multi-stage hydraulic fracturing has allowed development of the Bakken formation that was previously uneconomic due to low permeability.

Well Site Production

Production facilities required to operate each oil well include a pumping unit, oil and saltwater tanks, a flare stack and a heater treater, recycle pump, metering equipment, small sheds or enclosures, communication tower and other miscellaneous equipment would also be installed on the leveled working area of each well pad. Production facilities would be spaced according to minimum safe operating distances. All surface facilities would be painted a flat earth-tone color except facilities requiring high-visibility colors for safety. A dike or lined steel containment would be constructed completely around the production facilities designed to hold fluids. These dikes would be constructed of compacted subsoil, are impervious, and hold 110% capacity of the largest vessel plus one day production volume.

During the production phase, the operator would complete interim reclamation in accordance with the surface use agreement. Upon well abandonment, the operator would reclaim the well pad and access road as directed by the surface owner or by the BLM AO if reclamation is inadequate.

Land Use Plan (LUP) Conformance

Land Use Plan Name and Date and how proposed action is consistent (cite RMP sections and/or goals/objectives)	This proposed action involves private surface and Indian trust minerals and therefore is not subject to the decisions approved in the North Dakota Resource Management Plan. The Proposed Action is in conformance with the BIA Regulations at 25 CFR Part 211.4 and 225.4 to the Secretary's regulations.
Other Document and Date	<u>DOI-BLM-MT-C030-2018-0072-EA</u> ; May 2018 <u>DOI-BLM-MT-C030-2017-0077-EA</u> ; October 2017 <u>DOI-BLM-MT-C030-2016-0185-EA</u> ; August 2016
Cultural Resources:	<p>Robinson, Andrew J., 2019: Royal USA 41-3TFH Well Pad and Access Road: A Class III Cultural Resource Inventory in Mountrail County, North Dakota.</p> <p>Robinson, Andrew J., 2019: Horn USA 21-2H, Lottio Horn USA 21-2TFH, Julia Horn USA 11-2TFH, & Allen Horn USA 11-2H: A Class I Literature Review in Mountrail County, North Dakota.</p> <p>Copies of the reports and consultation letters were sent to the TAT-THPO on January 31, 2019. No response has been received to date.</p>

NEPA Adequacy Criteria

- Is the new proposed action a feature of, or essentially similar to, an alternative analyzed in the existing NEPA document(s)? Is the project within the same analysis area, or if the project location is different, are the geographic and resource conditions sufficiently similar to those analyzed in the existing NEPA document(s)? If there are differences, can you explain why they are not substantial?*

Yes, the proposed action is essentially similar to the selected alternative analyzed in DOI-BLM-MT-C030-2018-0072-EA, DOI-BLM-MT-C030-2016-0185-EA (Development of the Indian mineral lease from an existing well pad on privately owned surface within the exterior boundary of the FBIR) and DOI-BLM-MT-C030-2017-0077-EA (Development of Indian mineral leases from an existing well pad with an expansion, and from a new well pad and access road, on privately owned surface within the exterior boundary of the FBIR). No

significant new information or circumstances related to the proposed action have developed since the completion of the referenced EAs.

2. *Is the range of alternatives analyzed in the existing NEPA document(s) appropriate with respect to the new proposed action, given current environmental concerns, interests, and resource values?*

Yes, the range of alternatives considered in the EAs (to allow the drilling of the proposed well or not allow the drilling of the well) is appropriate for this action.

3. *Is the existing analysis valid in light of any new information or circumstances (such as, rangeland health standard assessment, recent endangered species listings, and updated lists of BLM-sensitive species)? Can you reasonably conclude that new information and new circumstances would not substantially change the analysis of the new proposed action?*

Yes, the existing analysis is valid. There are no known new circumstances or new information that would significantly change the analysis or conclusions for this project area.

4. *Are the direct, indirect, and cumulative effects that would result from implementation of the new proposed action similar (both quantitatively and qualitatively) to those analyzed in the existing NEPA document?*

The direct, indirect and cumulative effects of the proposed action are not significantly different from those identified in [DOI-BLM-MT-C030-2018-0072-EA](#), [DOI-BLM-MT-C030-2016-0185-EA](#) and [DOI-BLM-MT-C030-2017-0077-EA](#). Mitigation measures have been incorporated as Conditions of Approval with the approved permit. The original EAs analyzed the site-specific impacts that drilling a well bore on private surface penetrating federal minerals, would have on the land, wildlife, and cultural sites.

5. *Are the public involvement and interagency review associated with existing NEPA document(s) adequate for the current proposed action?*

Yes, the BLM has been involved in the review of the proposed action and the public had access to the North Dakota NEPA log which listed the original NEPA document [DOI-BLM-MT-C030-2018-0072-EA](#), [DOI-BLM-MT-C030-2016-0185-EA](#) and [DOI-BLM-MT-C030-2017-0077-EA](#). Additionally, the subject APD was posted in the front lobby of the North Dakota Field Office for thirty days, and the project was posted on the e-Planning website.

Persons, Agencies, and BLM Staff Consulted

Name	Title	Resource/Agency Represented
Lori Ford	Natural Resource Specialist	Project Lead, Minerals/BLM
Tim Zachmeier	Wildlife Biologist	Wildlife, T&E/BLM
Keith Waldron	Archaeologist	Cultural Resources/BLM;

Persons, Agencies, and BLM Staff Consulted

Lori Harbaugh	Planning and Environmental Coordinator	NEPA/BLM
Edward Kraft	AFM, Resources	Reviewer/BLM

Conclusion

Based on the review documented above, I conclude that this proposal conforms to the applicable land use plan and that the NEPA documentation fully covers the proposed action and constitutes BLM's compliance with the requirements of the NEPA.

LOREN
WICKSTROM

Loren C. Wickstrom
Field Manager

Digitally signed by LOREN
WICKSTROM
Date: 2019.03.18 16:16:43 -06'00'

Note: The signed Conclusion on this Worksheet does not constitute an appealable decision. However, if there is a lease, permit, or other authorization based on this DNA it is subject to protest or appeal under 43 CFR Part 4 and the program-specific regulations. A separate Decision Document is required if the Decision Document for the previously-completed action does not apply, consistent with program requirement

Appendix A

- Royal Pad: Royal USA 41-3TFH, Peterson USA 41-3TFH, and Evenson USA 41-3H Multiple Well Pad Project Maps and Diagrams
- Horn (Gladys) Pad: Allen Horn USA 11-2H, Horn USA 21-2H, Julia Horn USA 11-2TFH, and Lottio Horn USA 21-2TFH Multiple Well Pad Project Maps and Diagrams

APPENDIX A

ROYAL PAD PROJECT MAPS AND DIAGRAMS

Figure 1: Royal USA 41-3TFH, Peterson USA 41-3TFH, and Evenson USA 41-3H Multiple Well Pad Location Map

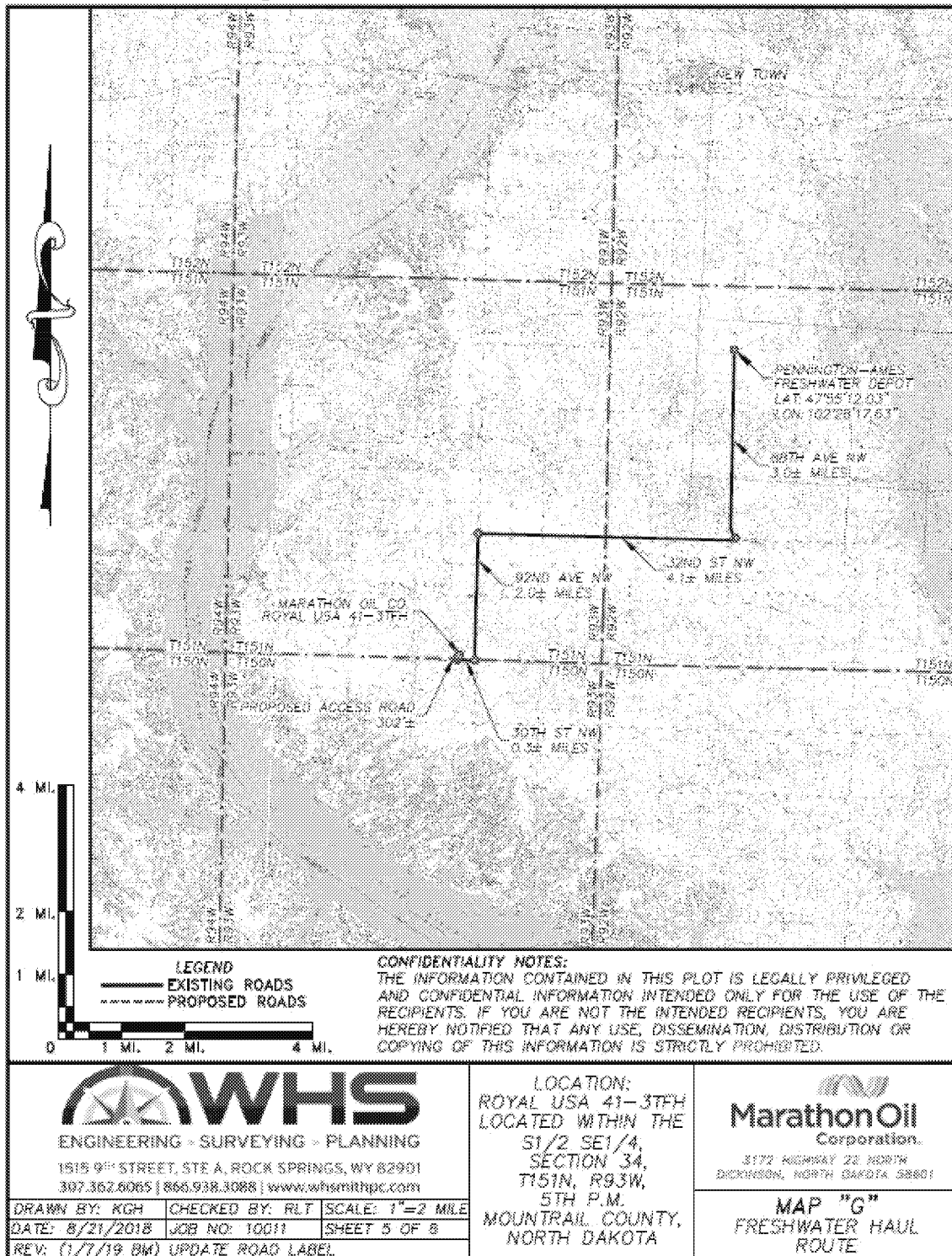


Figure 2: Royal USA 41-3TFH, Peterson USA 41-3TFH, and Evenson USA 41-3H Multiple Well Pad One Mile Radius Map

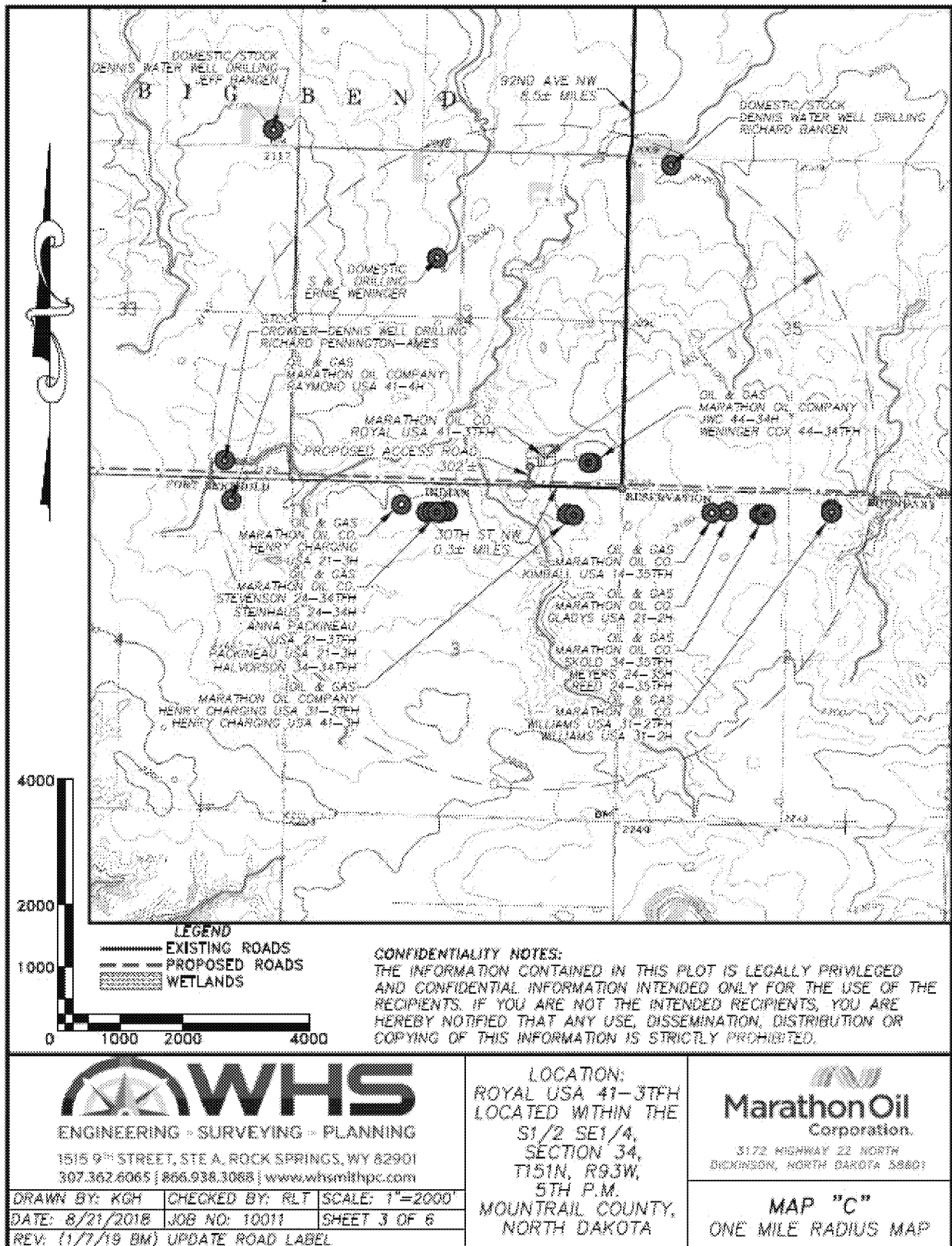


Figure 3: Royal USA 41-3TFH, Peterson USA 41-3TFH, and Evenson USA 41-3H Multiple Well Pad Construction Layout with Labeled Cuts and Fills

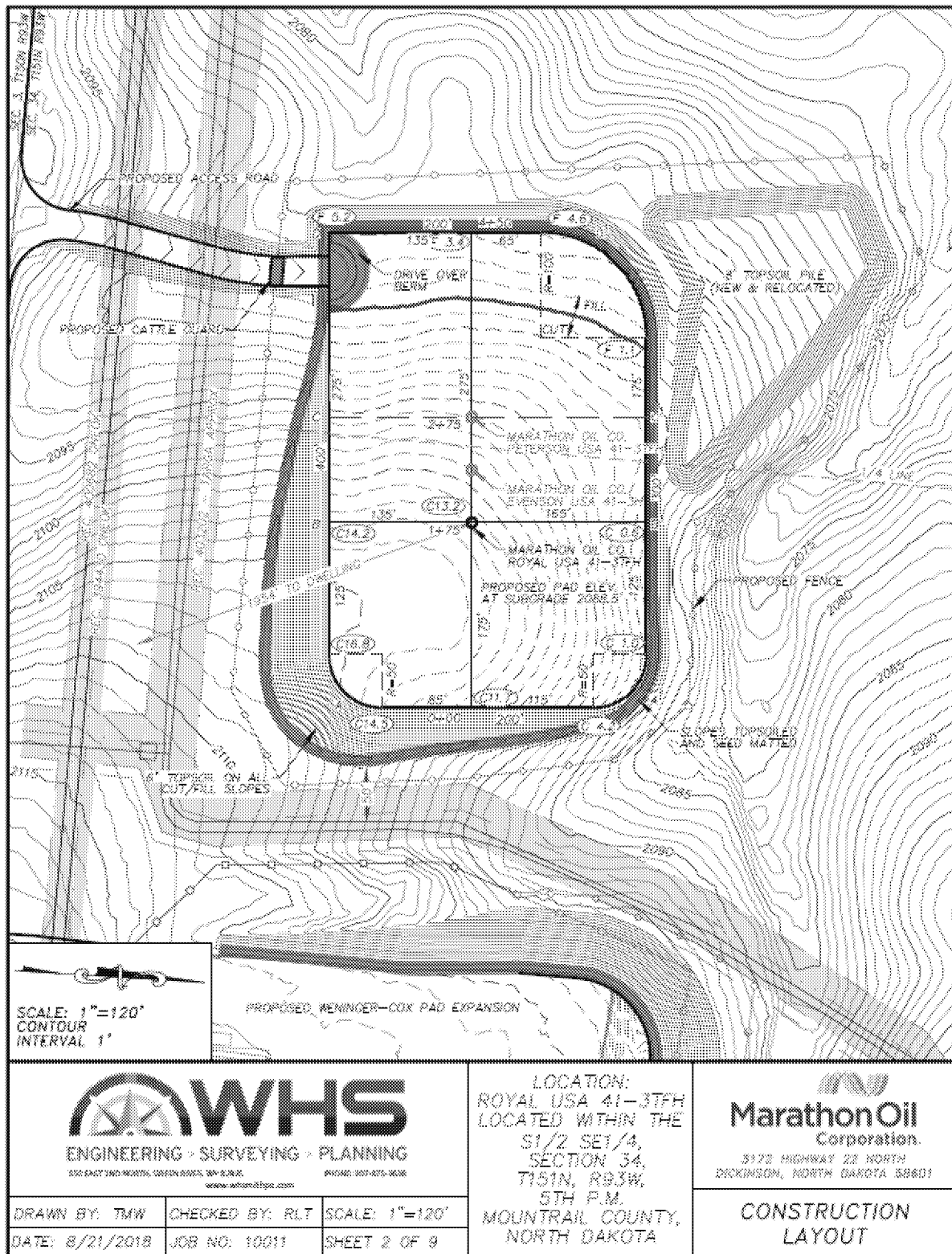
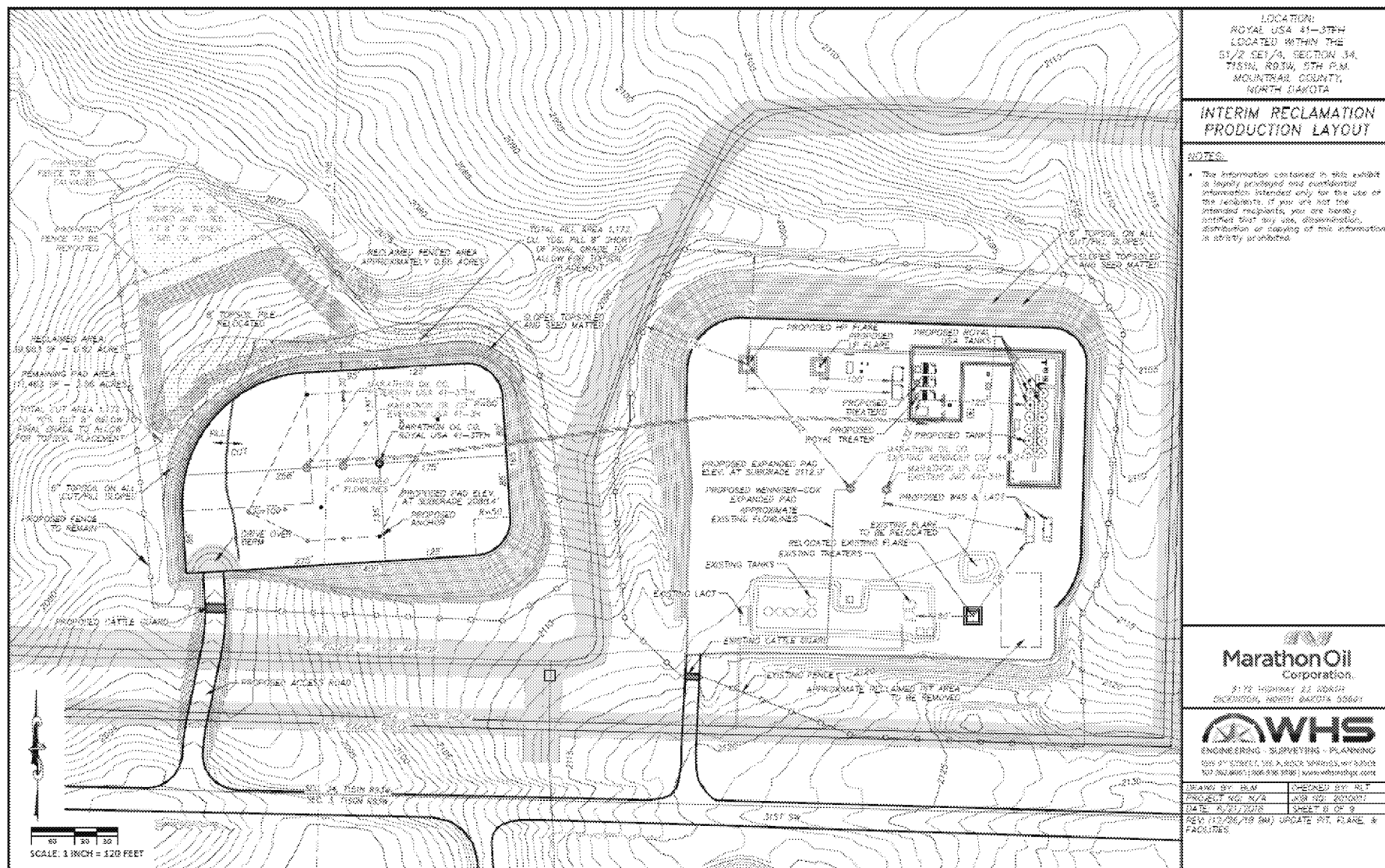


Figure 4: Royal USA 41-3TFH, Peterson USA 41-3TFH, and Evenson USA 41-3H Multiple Well Pad Production Facility Layout With the Interim Reclamation Areas Labeled.



HORN (GLADYS) PAD PROJECT MAPS AND DIAGRAMS

Figure 5: Allen Horn USA 11-2H, Horn USA 21-2H, Julia Horn USA 11-2TFH, and Lottio Horn USA 21-2TFH Multiple Well Pad Location Map

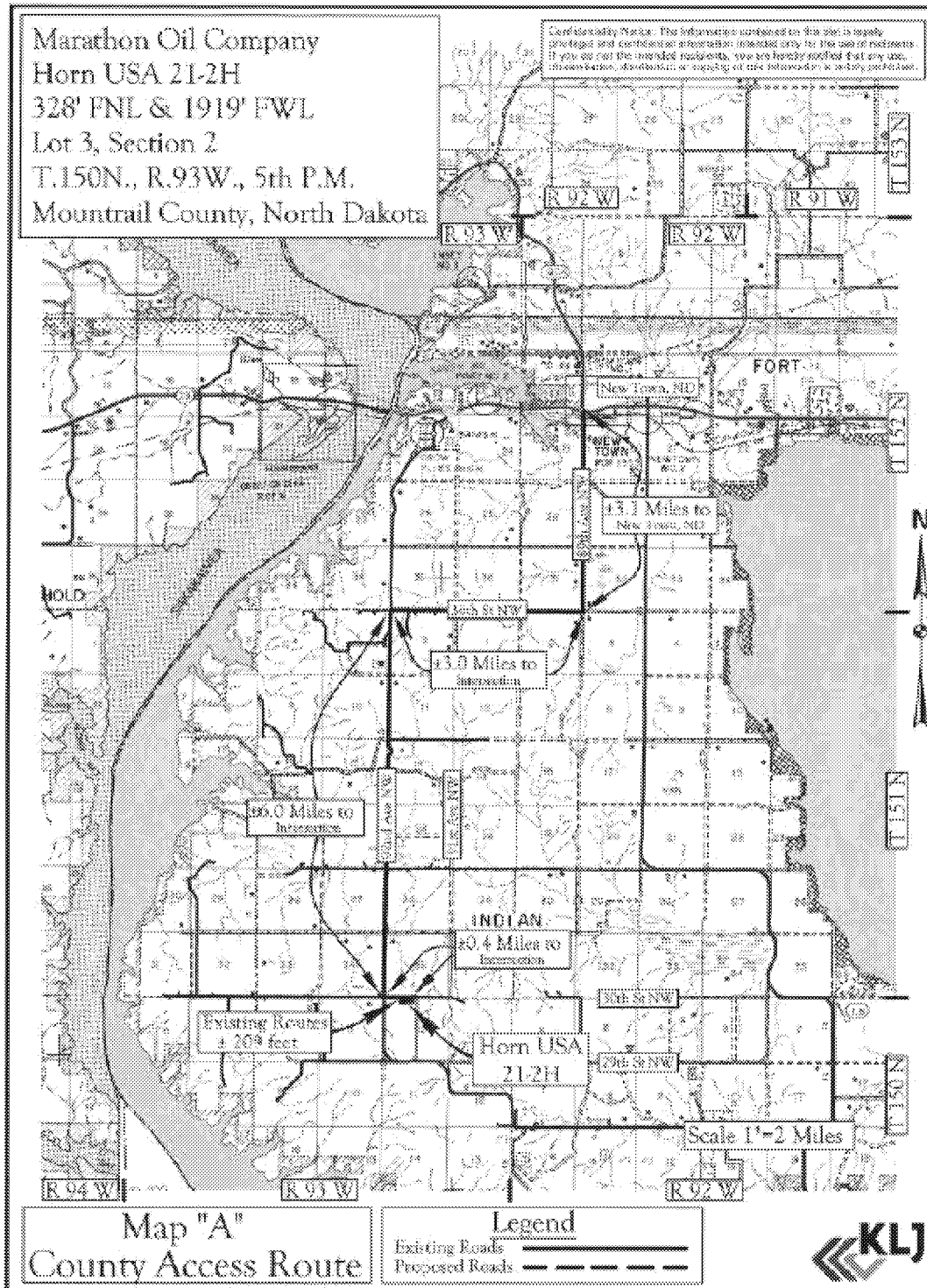
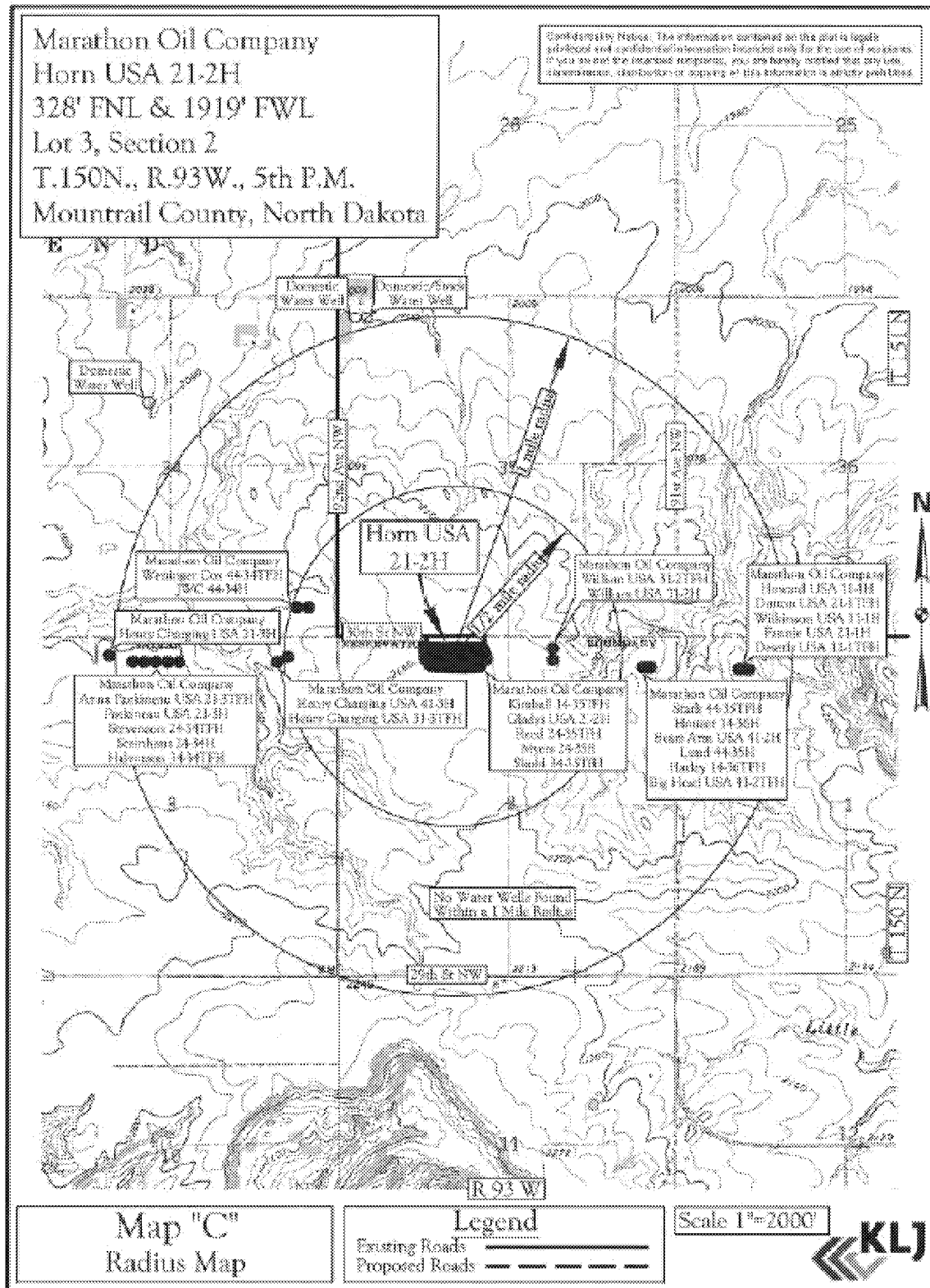


Figure 6: Allen Horn USA 11-2H, Horn USA 21-2H, Julia Horn USA 11-2TFH, and Lottio Horn USA 21-2TFH Well Pad One Mile Radius Map



Horn USA 21-2H
Production Layout

Item	Quantity	Unit	Volume
1. Existing Area	1.0000	Acres	21.00
2. Proposed Area	1.0000	Acres	21.00
3. Total Area	2.0000	Acres	42.00
4. Existing Area	1.0000	Acres	21.00
5. Proposed Area	1.0000	Acres	21.00
6. Total Area	2.0000	Acres	42.00
7. Existing Area	1.0000	Acres	21.00
8. Proposed Area	1.0000	Acres	21.00
9. Total Area	2.0000	Acres	42.00
10. Existing Area	1.0000	Acres	21.00
11. Proposed Area	1.0000	Acres	21.00
12. Total Area	2.0000	Acres	42.00

Attachment 1 – Surface Conditions of Approval



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
North Dakota Field Office
99 23rd Avenue West, Suite A
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<http://www.blm.gov/mt>

Surface Conditions of Approval

Marathon Oil Company's Proposed Oil Wells

Royal USA 41-3TFH
Peterson USA 41-3TFH
Evenson USA 41-3H

SESE Section 34, T151N, R93W
Mountrail County, North Dakota

A complete copy of the approved APD, including conditions, exhibits, BLM ROW permits/authorizations, must be on the well site and available for reference during the construction and drilling phases. Deviations or changes from the approved APD may require prior BLM approval via Sundry Notice.

NOTIFICATIONS

1. If there are any Site Specific Conditions of Approval below, verbally notify the assigned NRS in the office at least 24 hours prior to the following actions:
 - a. beginning road and location construction.
 - b. constructing/setting production facilities.
 - c. reclamation, including reshaping the location or road and topsoil spreading.
2. Undesirable Events. All spills (saltwater or oil) or pipeline breaks outside the diked area shall be reported within 24 hours to the BLM. Furthermore, spills, accidents, fires, injuries, blowouts and other undesirable events, as described in NTL-3A must be reported to this office within the timeframes in NTL-3A.

BLM representatives can be reached Monday through Friday (8:00AM - 4:30PM) at the office telephone number listed below. The BLM personnel can be contacted after hours or on weekends for emergency situations via the on-call number listed below.

BLM Personnel	Name	Home/Cell Telephone
On-Call 24-Hour Cellular Phone	On-Call	701-290-8220 (c)
ND Field Office	Main Desk	701-227-7700 (o)
Natural Resources Specialist	Lori Ford	701-260-2983 (c)

SITE SPECIFIC COAs

1. Whooping Crane sightings. Per the USFWS Standard Conditions and Recommendations, work would cease if whooping crane sightings occur within one mile of the proposed project area. In coordination of the Service, work may resume when the crane(s) have left the area.
2. Cultural Resources. Any cultural resource discovered by an operator or any person working on his/her behalf will be reported immediately to the BLM, and all operations that may further disturb such resources will be suspended until written authorization to proceed is issued by the BLM Authorizing Officer. An evaluation of the discovery will be made by the BLM to determine appropriate actions to prevent the loss of significant resource.

INFORMATIONAL NOTICE

The following items are provided for information and reference.

1. Other Permits and Permissions. The operator is responsible for obtaining any necessary Local, County, State, and other Federal Agency permissions and permits prior to implementation of the project. Operations shall be conducted as required by all other Federal, state, and local laws and regulations.
 - a. OFF-DSU AFFIDAVIT- The operator is responsible to obtain a SUA with the surface owner and shall submit a copy of the off unit affidavit to the BLM NDFO.
2. Undesirable Events. Spills, accidents, fires, injuries, blowouts and other undesirable events described in NTL-3A, must be reported to this office within the timeframes listed in NTL-3A. In the event of a spill, the operator is responsible for cleaning up the spill, and the landowner and state and local agencies are responsible for enforcing the cleanup.
3. Secondary Containment. Per state regulation (43-02-03-49), production equipment must be surrounded on all sides by a dike constructed of impermeable material and of sufficient dimensions to adequately contain 110% of the capacity of the largest vessel within it, plus one (1) day's fluid production. The base material under the dikes must also be sufficiently impermeable.
4. Jurisdictional Waters of the U.S. In accordance with Section 404 of the Clean Water Act, the operator shall obtain the appropriate authorization or permits from the U.S. Army Corps of Engineers (USACE) prior to discharging fill material into Waters of the U.S.. Waters of the U.S. are defined in 33 CFR Section 328.3 and may include wetlands as well as intermittent and ephemeral streams.
5. Pits. North Dakota State Law number 43-02-03-53 does not allow the use of surface pits for water disposal.

6. Plugging. When plugging the well, a steel plate dry hole marker welded to surface casing at least 4 ft. below re-contoured ground is required and must contain the same information as the well sign as directed by 43 CFR 3162.6 (30 CFR 221.22).

RECOMMENDED DESIGN FEATURES

The proposed Federal well is located on an off-lease fee (private) location. Authorization of surface disturbances related to the Proposed Action is dependent upon the State of North Dakota and the landowner. Because the Proposed Action is located on surface lands administered by a private land owner and is located off the Federal lease boundary, the BLM has no authority to require the following recommended measures. However the BLM encourages the operator to adhere to the following:

Site Specific Recommendations

None

Standard Recommendations

1. Migratory Birds. Implement preventative measures for the conservation of migratory birds. These measures will be implemented to reduce the potential for bird mortality, injury and/or harm from project activities such as pad construction, drilling, testing, completion and production of a well. Operators can work with the North Dakota Field Office during all stages of the project to determine and utilize the best preventative measures to implement. Such measures may include but are not limited to: netting or covering all containers or pits, mowing vegetation, screening drip buckets or containers, installing "exhaust cones" on top of exhaust stacks.
2. Cadastral. Protect all public land survey monuments, private property corners, and SMA boundary markers. In the event that any such land markers or monuments are destroyed in the exercise of the privileges authorized by this permit, depending on the type of monument destroyed, the permittee shall reestablish or reference the same in accordance with the following: (1) procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," (2) specifications of the county surveyor, or (3) the specifications of the SMA.
3. Road Construction and Maintenance. Construct and maintain roads to the standards established in the BLM Gold Book. Initial gravel application should be a minimum of 6 inches and proven to be free of the mineral erionite through testing procedures established by the North Dakota Department of Health. Provide timely year-round road maintenance and cleanup on the access road.
4. Dust Abatement. Implement dust abatement measures as needed to prevent fugitive dust from vehicular traffic, equipment operations, and wind events.
5. Topsoil. Strip the topsoil off the road and pile it in separate piles outside the road ditches. Strip the topsoil off the location and pile it separate from subsoil. Take measures to maintain topsoil fertility and to prevent topsoil piles from eroding.
6. Erosion Control. Use Best Management Practices such as matting, tackifiers, straw mulch,

and fiber rolls to aid in prevention of soil erosion.

7. Waste management. Do not dispose of or burn waste, trash, and chemicals on location.
8. Containment and tank placement. Locate invert, saltwater or testing tanks in a contained area and/or diked so that any spilled fluids will be contained. During drilling, ensure a berm no less than 2' in height surrounds the invert tanks in the event of a spill. Saltwater and diesel tanks should not be placed on topsoil stockpiles.
9. Secondary Containment. If a tank battery is constructed on location, surround tank setting, treater, and separator, with impermeable dike of sufficient capacity to adequately contain 110% of the contents of the largest vessel within it, plus one (1) day's production.
10. Production facility placement. Locate production facilities to maximize interim reclamation of the cut and fill slopes (3:1 slopes is optimal) of the well pad and CTB (if applicable). Place production tanks on the "cut" portion of the pad, except where interim reclamation re-contouring would preclude that placement. Ensure load lines terminate inside the dike and have adequate drip containment catch basins. Ensure facilities comply with API RP 12 R1.
11. Paint color. Paint all aboveground facilities a non-reflective earth tone color within 6 months of well completion.
12. Interim Reclamation. Conduct interim reclamation within 6 months to minimize erosion and transport of soils from disturbed surfaces. Reclaim portions of the access road and well pad (including any CTB pads) not needed for production. Re-contour cut and fill slopes, rip compacted subsoil, spread topsoil and reseed during the next spring or fall seeding period.
13. Seeding. Determine seed mix and seeding methods in conjunction with the landowner and local NRCS and/or county extension offices.
14. Weed Control. Regularly monitor and promptly control noxious weeds or other invasive non-native plant species.
15. Fires. Take measures to prevent and suppress fires caused by their employees, contractors, or subcontractors, including removal of vegetation around ignition sources.
16. Existing line protection. Locate and protect existing pipelines, power lines, and telephone lines.

Attachment 2 – Surface Conditions of Approval



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
North Dakota Field Office
99 23rd Avenue West, Suite A
Dickinson, North Dakota 58601-2619
(701) 227-7700
<http://www.blm.gov/mt>

Surface Conditions of Approval

Marathon Oil Company's Proposed Oil Wells

Allen Horn USA 11-2H, Horn USA 21-2H, Julia Horn USA 11-2TFH, and
Lottio Horn USA 21-2TFH

Lot 3 Section 2, T150N, R93W
Mountrail County, North Dakota

A complete copy of the approved APD, including conditions, exhibits, BLM ROW permits/authorizations, must be on the well site and available for reference during the construction and drilling phases. Deviations or changes from the approved APD may require prior BLM approval via Sundry Notice.

NOTIFICATIONS

3. If there are any Site Specific Conditions of Approval below, verbally notify the assigned NRS in the office at least 24 hours prior to the following actions:
 - a. beginning road and location construction.
 - b. constructing/setting production facilities.
 - c. reclamation, including reshaping the location or road and topsoil spreading.
4. Undesirable Events. All spills (saltwater or oil) or pipeline breaks outside the diked area shall be reported within 24 hours to the BLM. Furthermore, spills, accidents, fires, injuries, blowouts and other undesirable events, as described in NTL-3A must be reported to this office within the timeframes in NTL-3A.

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ND Field Office	Main Desk	701-227-7700 (o)
Natural Resources Specialist	Lori Ford	701-260-2983 (c)

SITE SPECIFIC COAs

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4. Cultural Resources. Any cultural resource discovered by an operator or any person working on his/her behalf will be reported immediately to the BLM, and all operations that may further disturb such resources will be suspended until written authorization to proceed is issued by the BLM Authorizing Officer. An evaluation of the discovery will be made by the BLM to determine appropriate actions to prevent the loss of significant resource.

INFORMATIONAL NOTICE

The following items are provided for information and reference.

7. Other Permits and Permissions. The operator is responsible for obtaining any necessary Local, County, State, and other Federal Agency permissions and permits prior to implementation of the project. Operations shall be conducted as required by all other Federal, state, and local laws and regulations.
8. Undesirable Events. Spills, accidents, fires, injuries, blowouts and other undesirable events described in NTL-3A, must be reported to this office within the timeframes listed in NTL-3A. In the event of a spill, the operator is responsible for cleaning up the spill, and the landowner and state and local agencies are responsible for enforcing the cleanup.
9. Secondary Containment. Per state regulation (43-02-03-49), production equipment must be surrounded on all sides by a dike constructed of impermeable material and of sufficient dimensions to adequately contain 110% of the capacity of the largest vessel within it, plus one (1) day's fluid production. The base material under the dikes must also be sufficiently impermeable.
10. Jurisdictional Waters of the U.S. In accordance with Section 404 of the Clean Water Act, the operator shall obtain the appropriate authorization or permits from the U.S. Army Corps of Engineers (USACE) prior to discharging fill material into Waters of the U.S.. Waters of the U.S. are defined in 33 CFR Section 328.3 and may include wetlands as well as intermittent and ephemeral streams.
11. Pits. North Dakota State Law number 43-02-03-53 does not allow the use of surface pits for water disposal.
12. Plugging. When plugging the well, a steel plate dry hole marker welded to surface casing at least 4 ft. below re-contoured ground is required, and must contain the same information as

the well sign as directed by 43 CFR 3162.6 (30 CFR 221.22).

RECOMMENDED DESIGN FEATURES

The proposed Federal well is located on an off-lease fee (private) location. Authorization of surface disturbances related to the Proposed Action is dependent upon the State of North Dakota and the landowner. Because the Proposed Action is located on surface lands administered by a private land owner and is located off the Federal lease boundary, the BLM has no authority to require the following recommended measures. However the BLM encourages the operator to adhere to the following:

Site Specific Recommendations

None

Standard Recommendations

1. Migratory Birds. Implement preventative measures for the conservation of migratory birds. These measures will be implemented to reduce the potential for bird mortality, injury and/or harm from project activities such as pad construction, drilling, testing, completion and production of a well. Operators can work with the North Dakota Field Office during all stages of the project to determine and utilize the best preventative measures to implement. Such measures may include but are not limited to: netting or covering all containers or pits, mowing vegetation, screening drip buckets or containers, installing "exhaust cones" on top of exhaust stacks.
2. Cadastral. Protect all public land survey monuments, private property corners, and SMA boundary markers. In the event that any such land markers or monuments are destroyed in the exercise of the privileges authorized by this permit, depending on the type of monument destroyed, the permittee shall reestablish or reference the same in accordance with the following: (1) procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," (2) specifications of the county surveyor, or (3) the specifications of the SMA.
3. Road Construction and Maintenance. Construct and maintain roads to the standards established in the BLM Gold Book. Initial gravel application should be a minimum of 6 inches and proven to be free of the mineral erionite through testing procedures established by the North Dakota Department of Health. Provide timely year-round road maintenance and cleanup on the access road.
4. Dust Abatement. Implement dust abatement measures as needed to prevent fugitive dust from vehicular traffic, equipment operations, and wind events.
5. Topsoil. Strip the topsoil off the road and pile it in separate piles outside the road ditches. Strip the topsoil off the location and pile it separate from subsoil. Take measures to maintain topsoil fertility and to prevent topsoil piles from eroding.
6. Erosion Control. Use Best Management Practices such as matting, tackifiers, straw mulch,

and fiber rolls to aid in prevention of soil erosion.

7. Waste management. Do not dispose of or burn waste, trash, and chemicals on location.
8. Containment and tank placement. Locate invert, saltwater or testing tanks in a contained area and/or diked so that any spilled fluids will be contained. During drilling, ensure a berm no less than 2' in height surrounds the invert tanks in the event of a spill. Saltwater and diesel tanks should not be placed on topsoil stockpiles.
9. Secondary Containment. If a tank battery is constructed on location, surround tank setting, treater, and separator, with impermeable dike of sufficient capacity to adequately contain 110% of the contents of the largest vessel within it, plus one (1) day's production.
10. Production facility placement. Locate production facilities to maximize interim reclamation of the cut and fill slopes (3:1 slopes is optimal) of the well pad and CTB (if applicable). Place production tanks on the "cut" portion of the pad, except where interim reclamation re-contouring would preclude that placement. Ensure load lines terminate inside the dike and have adequate drip containment catch basins. Ensure facilities comply with API RP 12 R1.
11. Paint color. Paint all aboveground facilities a non-reflective earth tone color within 6 months of well completion.
12. Interim Reclamation. Conduct interim reclamation within 6 months to minimize erosion and transport of soils from disturbed surfaces. Reclaim portions of the access road and well pad (including any CTB pads) not needed for production. Re-contour cut and fill slopes, rip compacted subsoil, spread topsoil and reseed during the next spring or fall seeding period.
13. Seeding. Determine seed mix and seeding methods in conjunction with the landowner and local NRCS and/or county extension offices.
14. Weed Control. Regularly monitor and promptly control noxious weeds or other invasive non-native plant species.
15. Fires. Take measures to prevent and suppress fires caused by their employees, contractors, or subcontractors, including removal of vegetation around ignition sources.
16. Existing line protection. Locate and protect existing pipelines, power lines, and telephone lines.

**MITIGATED PROGRAMMATIC ENVIRONMENTAL
ASSESSMENT
OIL AND GAS DEVELOPMENT
ON TRUST LANDS AND MINERALS
FORT BERTHOLD INDIAN RESERVATION**

**United States Department of the Interior
Bureau of Indian Affairs
Great Plains Regional Office
Aberdeen, South Dakota**

**Cooperating Agencies:
United States Department of the Interior
Bureau of Land Management
North Dakota Field Office
Dickinson, North Dakota**

**Three Affiliated Tribes
New Town, North Dakota**



May 2017

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under the No Action Alternative, the estimated 68 well pads and associated access roads would be completely reclaimed and returned to their pre-disturbance plant community condition.

Reptiles & Amphibians

Potential impacts to reptile and amphibian species under the No Action Alternative would be similar in nature to those discussed under the Proposed Action. However, the magnitude of habitat loss, fragmentation, and potential degradation would be less under the No Action Alternative. Implementation of the No Action Alternative would result in the initial loss of up to approximately 630 acres of breeding and foraging habitats, primarily for reptiles, with a longer-term loss of 179 acres occurring throughout the 30-year life of the production phase. At the end of the life of the No Action Alternative, the estimated 68 well pads and associated access roads would be completely reclaimed and returned to their pre-disturbance plant community condition. Under the No Action Alternative, the mitigation measures listed in Section 2.5 and/or in the BIA COAs in Appendix K may not be implemented as private lands are not under the jurisdiction of the BIA. This would potentially lead to a greater amount of impacts to reptiles and amphibians on a per well basis, even though the overall impacts would be less since fewer wells would be drilled.

Fisheries

The No Action Alternative, as with the Proposed Action, would avoid direct impacts on waterbodies supporting fisheries resources. Potential indirect effects on aquatic habitats supporting fish species would, however, be much lower in magnitude under the No Action Alternative. Soil erosion and subsequent sediment-laden runoff that could enter streams and downslope waterbodies would be on the scale of 93 percent less, as the amount of initial surface disturbance under the No Action Alternative is about 630 acres, compared to 8,976 acres for the Proposed Action. Likewise, the opportunity for hazardous spills or contaminants to enter the aquatic ecosystems from well pad sites would be much less, as there would be a maximum of 86 new wells constructed under the No Action Alternative, compared to 1,740 new wells under the Proposed Action. However, under the No Action Alternative, mitigation measures to prevent spills required by BIA may not be implemented.

3.8.3 Mitigation Measures

Mitigation measures that would be implemented for wildlife are found in Section 2.5 and/or in the BIA COAs (Appendix K).

3.9 THREATENED, ENDANGERED, AND CANDIDATE SPECIES

3.9.1 Existing Conditions

The USFWS has determined 10 threatened or endangered species may be present in the FBIR; no candidate species are currently present on the FBIR (the Sprague's pipit [*Anthus spragueii*] is no longer a candidate species) (81 FR 19527). Table 3.9-1 identifies these species and their federal status. Additional information on the species, potential impacts, and additional figures can be found in the Programmatic Biological Assessment Biological Evaluation (BABE), May 2014; and in the Revised BABE Addendum, October 2015. USFWS concluded informal consultation on June 4, 2014, and December 3, 2015, with the BIA in regards to the Proposed Action (Appendix O).

Table 3.9-1. Federally Listed Species Potentially Occurring on the FBIR

Common Name	Scientific Name	Status
Black-footed ferret	<i>Mustela nigripes</i>	Endangered
Gray wolf	<i>Canis lupus</i>	Endangered
Interior least tern	<i>Sternula antillarum</i>	Endangered
Pallid sturgeon	<i>Scaphirhynchus albus</i>	Endangered
Poweshiek skipperling	<i>Oarisma poweshiek</i>	Endangered
Whooping crane	<i>Grus americana</i>	Endangered
Dakota skipper	<i>Hesperia dacotae</i>	Threatened
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened
Piping plover and critical habitat	<i>Charadrius melodus</i>	Threatened
Rufa red knot	<i>Calidris canutus rufa</i>	Threatened

Source: USFWS 2015b

3.9.1.1 Black-footed FerretLife History

Black-footed ferrets (*Mustela nigripes*) are 20 to 24 inch long members of the Mustelid family with 6-inch long tails and a distinctive black mask across the face. Historically, the black-footed ferret ranged throughout the Great Plains. This species is found exclusively within short-grass prairies and is associated with prairie dog complexes since prairie dogs make up a majority of their food. In addition to food sources, ferrets also use prairie dog complexes for shelter (USFWS 2011b).

Current Status and Range-wide Distribution

Black-footed ferrets are considered to be one of the rarest mammal species in North America and were listed as endangered under the ESA in 1970. The primary cause for the listing of this species is the loss of prairie dog complexes throughout the Great Plains. Intensive poisoning campaigns and the conversion of prairie habitat into agricultural land have also greatly reduced populations of prairie dogs and black-footed ferrets. As such, black-footed ferrets are considered to be extirpated in North Dakota. No reintroductions of black-footed ferrets are currently being considered for North Dakota (Hagen et al. 2005).

On the FBIR, a few black-tailed prairie dog colonies exist, though these are too small and isolated to support any populations of black-footed ferrets. Ferrets typically require more than 10,000 acres of prairie dog colonies in a complex within 1-mile. There have been no reported sightings of ferrets on the FBIR (Mann-Klager 2011).

3.9.1.2 Gray WolfLife History

Gray wolves (*Canis lupus*) are the largest canid species in North America, generally weighing between 70 and 115 pounds and standing approximately 30 inches high at the shoulder. Color can vary between white and black, though gray is the most common color. Gray wolves are a territorial species, forming packs that will keep other wolves and coyotes out of their 50 to 100 square mile home ranges. Indirectly, wolves support numerous other species. Ravens (*Corvus* spp.), foxes, wolverines (*Gulo gulo*), vultures (e.g., *Cathartes* spp.), and other scavengers will feed on the remains of animals killed by wolves. Wolves themselves typically feed on large game species such as deer, elk, pronghorn, and in some cases, livestock (USFWS 2011c).

The gray wolf once had the greatest distribution of any mammal, other than humans. It was historically found throughout North America, with the exception of part of the southwest and southeast U.S., where it was replaced by the red wolf (*Canis rufus*). Wolves are highly adaptable and can be found in a wide variety of habitats, wherever there are sufficient sources of food. Generally, however, wolves require large areas of land with low amounts of human disturbance and suitable sites for denning.

Current Status and Range-wide Distribution

Wolves in the eastern portion of North Dakota (east of U.S. Highway 83) are considered part of the Western Great Lakes Distinct Population Segment and were listed as endangered under the ESA in 1974. The Western Great Lakes Distinct Population Segment was removed from the ESA in January 2012. However, gray wolves located west of U.S. Highway 83 in North Dakota are still listed as endangered. The primary cause for the listing of the gray wolf was an extensive eradication program that included shooting, poisoning, and trapping (USFWS 2011c).

Currently, wolves are established in Minnesota, Wisconsin, Michigan, Montana, Idaho, Wyoming, and Washington. They may be found in other states, including North Dakota, though they are not known to have established packs in those areas. In North Dakota, wolves are most likely to occur around the Turtle Mountain area, approximately 100 miles northeast of the FBIR (Towner 2011). In recent years, sightings of wolves in North Dakota have increased as the population of wolves has grown and spread, though there are no known breeding pairs (Hagen et al. 2005). Over the last 25 years, NDGFD documented 35 verified (with evidence) and 63 unverified (no evidence, but plausible report) wolf reports in the state of North Dakota. There are no known verified or unverified wolf reports on the FBIR. Tests performed on wolves found in North Dakota have shown that the majority of individuals are dispersing from the Minnesota population, with a smaller percentage from Manitoba, Canada. Although there are no recent documented occurrences, wolves that are sighted on the FBIR are likely transients, dispersing from populations elsewhere (Mann-Klager 2011). Overall, while there are lower densities of people and roads in western North Dakota, which is favorable for gray wolves, the establishment of a pack within the FBIR is highly unlikely given existing infrastructure development and the potential for detrimental human/wolf interactions.

3.9.1.3 Interior Least Tern

Life History

Least terns (*Sternula antillarum*) are the smallest species of the gull and tern family at approximately 9 inches long. Least terns have a forked tail and narrow pointed wings. They feed by diving into water for fish, their primary food source, but it is not clear how far and where they will travel for feeding. Various authors have found that there is high variation in the distances that least terns will travel for feeding; especially for the different locations in which they are found.

Historically, least terns were found on the Atlantic Ocean, Gulf of Mexico, and California coasts and on the Mississippi, Missouri, and Rio Grande rivers. They were also found throughout the Missouri River system in North Dakota (USFWS 2011d). Least terns have distinct breeding and wintering areas. Breeding least terns require the presence of dry, exposed sandbars, and favorable river flows that support a forage fish supply and that isolate the sandbars from the riverbanks. Characteristic nesting sites are dry, flat, sparsely vegetated sand and gravels bars with wide, unobstructed, water-filled nest channels (Mann-Klager 2011). Nests are bowl-shaped depressions, approximately 4 inches across. A typical clutch consists of two

to three eggs, which take 24 days to incubate (USFWS 2011d). The breeding season is from May 1 through August 31, with the peak of nesting season occurring from mid-June through mid-July.

The interior least tern is thought to winter on beaches along the Central American coast and along the northern coast of South America from Venezuela to northeastern Brazil (USFWS 2011d).

Current Status and Range-wide Distribution

Least terns were listed as endangered under the ESA in 1985. The primary cause for their listing was the loss of habitat from dam construction and river channelization. Dams have altered river flows that are not conducive to the creation and maintenance of least tern habitat. Other potential causes for the decline of this species include human disturbance and cold water temperatures in created reservoirs affecting the quantity of forage fish available (USFWS 2011d).

The interior population of least terns currently breeds in the Mississippi, Missouri, and Rio Grande river systems. Current census data indicate that there are approximately 8,000 least terns in the interior population. In North Dakota, this species is mainly found on the Missouri River from the Garrison Dam south to Lake Oahe, and on the Missouri and Yellowstone rivers upstream of Lake Sakakawea. Approximately 100 breeding pairs are thought to occur in North Dakota (USFWS 2011d).

Despite the length of the shoreline of Lake Sakakawea, there is little, albeit regular, use by least terns. Between 1991 and 1999 there was an average of 17 least terns counted annually along the lake. Habitat availability along the lake is highly dependent on the water level of the lake. As the volume of Lake Sakakawea increases, shoreline habitat available to nesting least terns is reduced. Generally, when the lake rises above an elevation of 1,850 feet (normal operating capacity), virtually all habitat is inundated. From 1967 to 1999, this occurred 9 percent of the time (USFWS 2000). A recent study (Shaffer et al. 2013) noted that when Lake Sakakawea is in drawdown state, use by terns has never been known to be high on its exposed shoreline and only a small number of least terns nest there. Accordingly, they did not include least tern data because it would be too sparse for analysis. No critical habitat has been designated on FBIR for least terns.

3.9.1.4 Pallid Sturgeon

Life History

Pallid sturgeon have a flattened snout, a long slender tail, and are armored with five lengthwise rows of bony plates down the side of the body instead of scales. Their mouth is toothless and positioned under their snout for sucking small fish and invertebrates from the river bottom. Pallid sturgeon can weigh up to 80 pounds and reach lengths of 6 feet. The back and sides of pallid sturgeon are grayish-white (USFWS 2011e).

Historically, the pallid sturgeon was found in the Missouri River from Fort Benton, Montana, to St. Louis Missouri; in the Mississippi River from above St. Louis to the Gulf of Mexico; and in the lower reaches of other large tributaries, such as the Yellowstone, Platte, Kansas, Ohio, Arkansas, Red, and Sunflower rivers, and in the first 60 miles of the Atchafalaya River. Pallid sturgeon prefer large rivers with high turbidity and a natural flow (generally between 40 to 100 cfs). Preferred habitat has a diversity of depths and velocities, formed by braided channels, sandbars, islands, sand flats, and gravel bars (USFWS 2011e).

Pallid sturgeon are a long-lived species, with individuals living as long as 60 years or more. Females reach sexual maturity between 7 and 15 years old, and go up to 10 years between spawning (USFWS 2011e).

Current Status and Range-wide Distribution

The pallid sturgeon was listed as endangered under the ESA on September 6, 1990. The primary cause for the decline in pallid sturgeon populations is habitat loss and modification from the construction of dams and channelization of rivers. Other causes for their decline potentially include commercial fishing, environmental contaminants, and hybridization with the shovelnose sturgeon (*Scaphirhynchus albus*).

Currently, pallid sturgeon are scarce in the upper Missouri River above Fort Peck Reservoir; in the Missouri and lower Yellowstone rivers between the Fort Peck Dam and Lake Sakakawea; in the Missouri River downstream of Gavins Point Dam, and in the Mississippi and Atchafalaya rivers (USFWS 2011e). While Lake Sakakawea on the FBIR does not contain the highest quality habitat for pallid sturgeon, they are known to occur there (Towner 2011).

3.9.1.5 Poweshiek Skipperling

Life History

The Poweshiek skipperling (*Oarisma Poweshiek*) is a small and slender-bodied butterfly with a 1-inch wingspan. The size of the skipperling appears to vary somewhat across its range; the North Dakota and South Dakota populations tend to be slightly smaller than the Iowa populations (Royer and Marrone 1992a). The upper wing surface is dark brown with a band of orange along the wing margins and a lighter orange head. The underside of the wings are dark brown to light brown with very prominent white veins. Poweshiek skipperlings make one flight per year, usually occurring from the middle of June through the middle of July (USFWS 2014a).

Historically, Poweshiek skipperlings were found in tallgrass prairie and prairie fens from Manitoba to Iowa, with populations also found in Michigan and Wisconsin (USFWS 2014a). Habitat for Poweshiek skipperlings consists of prairie fens, tallgrass prairie, grassy lake and stream edges, moist meadows, sedge meadows, and wet-to-dry prairie. Royer and Marrone (1992a) describe the species' habitat in North Dakota and South Dakota as moist ground in undisturbed native tall grass prairies. Approximately 25,900 acres are designated as critical habitat for the Poweshiek skipperling in Iowa, Michigan, Minnesota, North Dakota, South Dakota, and Wisconsin (80 FR 59248).

Current Status and Range-wide Distribution

The Poweshiek skipperling was listed as endangered under the ESA on November 24, 2014 (79 FR 63672), and designated critical habitat for the Poweshiek skipperling became effective November 2, 2015, under the ESA (80 FR 59248).

Currently, the Poweshiek skipperling occurs in Wisconsin, Michigan, and Manitoba, and may have been extirpated from North and South Dakota, Minnesota, and Iowa in the last 10 years (USFWS 2014a). Surveys in North Dakota were minimal between 1998 through 2011, but surveys conducted in 1997 documented more than 10 Poweshiek skipperlings at one survey site. Surveys conducted during the 2012 and 2013 flight seasons in North Dakota resulted in zero detections; the species was last observed in North Dakota in 2001 (79 FR 63672). The last observation of the skipperling in North Dakota in 2001, occurred over 200 miles southeast of the FBIR. The Poweshiek skipperling has not been observed on the FBIR.

3.9.1.6 Whooping Crane

Life History

The whooping crane is the tallest of the North American birds, standing 5 feet tall with a wingspan of up to 7 feet long. It is white with black wingtips and red markings on the head (USFWS 2011f). Juvenile plumage is a reddish cinnamon color with the full adult plumage present late in the second summer of an individual's life (Canadian Wildlife Service and USFWS [CWS and USFWS] 2007). Individuals are typically long lived with estimates of up to 30 years or longer (USFWS 2011f).

The historical breeding range of the whooping crane extended from Illinois, northwest through North Dakota, and up to the Northwest Territories in Canada. The birds historically wintered along the Gulf of Mexico. By the 1940s there were an estimated 21 whooping cranes left in the world. Most were from a flock that wintered at the Aransas National Wildlife Refuge on the coast of Texas. It was later discovered that those individuals were breeding in Wood Buffalo National Park in Canada. The last known nesting whooping cranes in North Dakota occurred in McHenry County (northeast of the FBIR approximately 40 miles) in 1915 (USFWS 2011f).

Breeding habitat consists primarily of shallow ponds that contain bulrush in Wood Buffalo National Park. Nests are placed on the ground and an average of two eggs are laid, usually in April to late May. The incubation period for whooping cranes is between 29 and 31 days. Whooping cranes typically leave their breeding area in mid-September, with migration lasting 2 to 6 weeks. Southward migration requires approximately a 2-day flight from breeding range to staging area in Saskatchewan where birds remain 1 to 5 weeks and a rapid 1 week trip across U.S. prairie states. Fall migration consists of most birds spending several weeks resting and feeding in Saskatchewan before moving quickly through the U.S. (Lewis 1995). Wintering habitat is located primarily in the Aransas National Wildlife Refuge and is primarily made up of salt flats and nearby adjacent islands (CWS and USFWS 2007).

During migration, whooping cranes use stopover habitat opportunistically and may use different areas in subsequent years. It is unlikely for a whooping crane to remain in one location for longer than a few days during migration (Towner 2011). Whooping cranes often stop wherever they happen to be during the evening or when conditions are no longer suitable for flight. Whooping cranes generally avoid rocky substrates and heavily vegetated sites (Armbruster 1990).

Current Status and Range-wide Distribution

Whooping cranes were listed as endangered under the ESA in 1970. The primary reasons for their decline in the early twentieth century were loss of habitat and shooting (USFWS 2011f). The current, primary source of mortality for fledged whooping cranes is collision with electric utility lines. Since 1956, collisions with electric utility lines have killed or seriously injured at least 46 whooping cranes (Towner 2011).

Currently, the Aransas-Wood Buffalo flock remains the only self-sustaining wild population and migratory group. In fall 2011, this population was estimated to contain 278 individuals, or over 63 percent of the entire wild population of whooping cranes (Stehn 2011).

The 2,400 mile migration route or corridor between Wood Buffalo National Park and Aransas National Wildlife Refuge generally cuts across northeastern Alberta and southwestern Saskatchewan; through northeastern Montana; the western half of North Dakota; central South Dakota, Nebraska, and Oklahoma;

and east-central Texas. The primary migration route is a narrow swath approximately 140 miles wide (Mann-Klager 2011). During the 2010 fall migration, 12 whooping cranes were identified in North Dakota with 11 sightings confirmed during the 2010 spring migration (Stehn 2011).

The FBIR is located within a portion of the migration corridor, as further discussed and shown in Section 3.9.2.1. The most common stopover habitat for migrating cranes is palustrine wetlands, though they have been found along Lake Sakakawea. Wetlands adjacent to croplands that can be used for feeding are predominately used. The majority of historic sightings (in the migration corridors) of whooping cranes are on the eastern portion of FBIR (north and east of the Missouri River), where there is more cropland, the terrain is flatter, and the habitat is more conducive to whooping crane use (Mann-Klager 2011).

3.9.1.7 Dakota Skipper

Life History

The Dakota skipper is a small butterfly with a 1-inch wingspan. Like other species of skippers, they have a thick body with a more powerful and faster flight than other butterflies. The upper side of a male's wing ranges from tawny orange to brown, while the upper side of a female's wing is darker brown with tawny-orange spots and faint white spots on the margin of the wing (USFWS 2011g). Dakota skippers make one flight per year, usually occurring from the middle of June through the end of July. The flight period varies from year to year, depending on weather patterns (McCabe 1979; McCabe 1981; Dana 1991; Royer and Marrone 1992b; Skadsen 1997; and Swengel and Swengel 1999). The average adult lifespan of a Dakota skipper is three weeks (Dana 1991).

Dakota skippers were once found from southern Saskatchewan, across North and South Dakota, and into Minnesota, Iowa, and Illinois. Habitat for Dakota skippers consists of high-quality prairie ranging from wet-mesic tallgrass prairie to dry-mesic mixed-grass prairie. Royer and Marrone (1992b) categorized Dakota skipper habitat into two main types that were once intermixed on a landscape scale, but are now mostly segregated. The first, referred to as *Type A* is low wet-mesic prairie that occurs on near-shore glacial lake deposits in north-central North Dakota, southeast North Dakota, and Manitoba. The second Dakota skipper habitat type, referred to as *Type B* occurs on rolling terrain over gravelly glacial moraine deposits and is dominated by bluestems and needle grasses (*Heterostipa* spp.). The flower species provide the Dakota skipper with nectar which is critical for survival during the relatively short (3 week) flight period in June and July (USFWS 2011g).

In the Towner-Karlsruhe complex in McHenry County, Lenz (1999) noted that Dakota skippers appear to be more commonly associated with mesic to wet-mesic prairie (Type A) than in other parts of their range to the south and east (northeast of the FBIR). Type B habitats are more commonly found in western sites (H. Riddle, USFWS – North Dakota Ecological Services Office, pers. comm.).

Generally, the occurrence of more and/or denser populations of skippers were found in larger prairie patches (Swengel and Swengel 1999). Dakota skipper dispersal is very limited because in part to a short adult life span and single annual flight. Unless a site is within about 0.6 mile of a site that generates a sufficient number of emigrants, the species' extirpation from a site is likely permanent. The species could be artificially reintroduced to a site; however, the capability to propagate the Dakota skipper is currently lacking (78 FR 63577).

Current Status and Range-wide Distribution

The Dakota skipper was listed as threatened under the ESA on November 24, 2014 (79 FR 63672); designated critical habitat for the Dakota skipper was effective November 2, 2015, under the ESA (80 FR 59248).

The primary cause for the decline of this species is the loss of high-quality native prairie habitats from over-grazing, conversion to agricultural land, disruption of natural prairie fire cycles from excessive fire suppression, and other disruptive activities (USFWS 2011g).

Currently, the Dakota skipper occurs no further east than western Minnesota and is believed to be extirpated from Illinois and Iowa. In 2012, Dakota skippers were detected at 13 of the 25 sites surveyed in North Dakota. Approximately 135 additional locations were surveyed in North Dakota from 1991 to 2012 (USFWS 2013a, unpublished geodatabase), and the species was never detected. However, none of the locations surveyed were on the FBIR (H. Riddle, USFWS – North Dakota Ecological Services Office, pers. comm., January 2014; Royer 2012). Only a small fraction of the grassland in North Dakota has been surveyed for the Dakota skipper and it is thought, per 78 FR 63574 and USFWS 2013a, unpublished geodatabase, that a significant portion of the un-surveyed grassland is unsuitable for the Dakota skipper. Dakota skippers are documented as occurring at 18 separate sites within five counties in North Dakota (Royer and Royer 2012). Of those 18 sites, 13 are within the Towner-Karlsruhe complex (complex defined as a known or suspected metapopulation) (Cochrane and Delphey 2002) in McHenry County (northeast of the FBIR), one is located in the Sheyenne National Grasslands in Ransom County (southeast of the FBIR), and one is located in both Wells County and McLean County, which are both east of the FBIR. The two remaining sites are located in McKenzie County (Royer and Royer 2012); one is outside the Project Area and one is within the Project Area.

Potential habitat and a previously documented population of Dakota skippers exist within the FBIR in McKenzie County. The Eagle Nest Butte population of Dakota skippers is located along the western edge of the FBIR. This population is located along the western edge of the Dakota skippers' range. The habitat size and location of this population is considered to be too small (approximately 10 acres) and isolated to be secure (Towner 2011). In 2012, the location was surveyed when the Dakota skipper was in peak flight elsewhere in the state; however, there were no observations of the species. The site was surveyed again in 2014, and two males were observed. Royer et al. (2014) noted that the site remained essentially unchanged since earlier surveys in 1991, 1996, and 1997; the area is still used for light occasional grazing. The prognosis for this population is uncertain due to the small size of the area. The nearest extant population to the FBIR population is located approximately 30 miles north/northwest in McKenzie County in the Little Missouri National Grassland (Royer et al. 2014), which is too far away to be a source of emigrants.

Outside of the Eagle Nest Butte population location, other potential habitat for the Dakota skipper does exist on the FBIR (Towner 2011) and there has been only one other confirmed occurrence. On July 7, 2015, a Dakota skipper was observed (pending confirmation) during a survey conducted for the presence of the species at a proposed well pad location on FBIR. The Dakota skipper was observed approximately 8 miles from the Eagle Nest Butte site (M. Cook, Regulatory Team Lead/Ecologist - WPX Energy, pers. comm. July 2015). However, no additional confirmed Dakota skipper occurrences have been documented within the FBIR (North Dakota Parks and Recreation 2013; Cochrane and Delphey 2002; H. Riddle, USFWS – North Dakota Ecological Services Office, pers. comm., January 2014; Royer 2012). There was

one unconfirmed observation of two adult Dakota skippers identified by Natural Resource Options, Inc., on August 19, 2010, on the FBIR in Dunn County (no photos or GPS coordinates) (K. Williams, Atkins, Inc., pers. comm., January 2014); however, that occurrence has not been confirmed with any follow-up surveys or documentation by a specialist. Note, Dakota skipper occupancy surveys have typically been completed during mid-June through mid-July (Royer et al. 2014), approximately 1 month prior to when the unconfirmed observation in 2010 was documented.

In addition, there are two North Dakota units of critical habitat proposed for the Dakota skipper in McKenzie County; however, neither of the units are located within the FBIR (80 FR 59248).

3.9.1.8 Northern Long-eared Bat

Life History

The northern long-eared bat is a medium-sized bat about 3 to 4 inches long with a wingspan of 9 to 10 inches. The northern long-eared bat can be distinguished from other bats by its long ears, which average approximately 1 inch in length (Whitaker and Mumford 2009). Its fur can be medium to dark brown on its back and tawny to pale on its underside. This species can live up to 19 years (USFWS 2013b).

The current geographical distribution of the northern long-eared bat has not changed from its historical distribution. The northern long-eared bat can be found in the eastern and north-central U.S., including the entire state of North Dakota, and all Canadian provinces from the Atlantic Ocean west to southern Yukon Territory and eastern British Columbia. This species spends winter hibernating in caves or mines with constant temperatures and high humidity, and summer roosting singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Northern long-eared bats typically hibernate between mid-fall through mid-spring each year (USFWS 2014b). Pregnant females migrate to summer areas and roost in small colonies with other pregnant females where they give birth to one pup. The northern long-eared bat feeds on moths, flies, leafhoppers, caddisflies, and beetles in the understory of forested hillsides and ridges (USFWS 2013b).

Current Status and Range-wide Distribution

The northern long-eared bat was listed as threatened under the ESA on May 4, 2015 (80 FR 17974). In addition, the USFWS issued a final 4(d) rule on January 14, 2016 (81 FR 1900). The final 4(d) rule provides flexibility to landowners, land managers, government agencies and others as they conduct activities in northern long-eared bat habitat (USFWS 2015c). The primary reason for the decline in the species is due to white-nose syndrome (a disease that affects hibernating bats). The species has declined 99 percent in the northeast U.S. because of this disease. In addition, impacts to hibernacula, loss or degradation of summer habitat, and wind farm operation may be important factors affecting the species' ability to persist while suffering from white-nose syndrome (USFWS 2013b).

The species is historically less common in the western portion of its range, which includes North Dakota, than in the northern portion of its range (Amelon and Burhans 2006). In addition, the State of North Dakota is not located within the white-nose syndrome buffer zone as delineated by the USFWS (2015c). Summer surveys in North Dakota (2009-2011) documented the species in the Turtle Mountains, the Missouri River Valley, and in the Badlands (Gillam and Barnhart 2011). No hibernacula are known within North Dakota; however, there has been very limited survey effort in the state (H. Riddle, USFWS – North Dakota Ecological Services Office, pers. comm., 2012).

3.9.1.9 Piping Plover

Life History

Piping plovers are small, stocky shorebirds with a distinctly pale plumage, which matches the beaches they inhabit. Prominent markings include a black band across the upper forehead and another across the upper breast. The breeding season for piping plovers extends from mid-April through August, with an average of four eggs laid. Nests are shallow depressions in open, gravel, or sand substrate. Incubation typically lasts 28 days (USFWS 2011h).

In the Great Plains, piping plovers inhabit barren sand and gravel shores of rivers and lakes. Typically, these areas are devoid of vegetation. Nearly all of the natural lakes used by piping plovers in North Dakota are alkaline with salt-encrusted, white beaches. Beaches used by piping plovers are generally 30 to 120 feet wide (USFWS 2011h).

Open, wet, sandy areas provide feeding habitat for piping plovers on river systems and throughout most of the birds' nesting range. Piping plovers feed primarily on exposed substrates by pecking for invertebrates at or just below the surface (67 FR 57640). Their diet consists of freshwater and marine invertebrates washed up on shore and terrestrial and benthic invertebrates (Elliott-Smith and Haig 2004), marine worms, fly larvae, beetles, crustaceans, mollusks, and other invertebrates.

Current Status and Range-wide Distribution

Piping plovers were listed as threatened under the ESA in 1985. Numerous threats were identified, with habitat destruction and poor breeding success being the most severe. In North Dakota, piping plovers that use alkali lakes suffer significant losses of eggs and chicks due to predators (e.g., coyotes, skunks, and feral cats) that have increased in abundance in recent decades. Construction of reservoirs on the Missouri River has resulted in a loss of sandbar habitat. Piping plovers using the remaining sandbars on the river are susceptible to predation, disturbance from people, and water fluctuations from dam operations (USFWS 2011h).

Piping plovers are known to breed in the Great Plains and Great Lakes region, and along the Atlantic Ocean Coast (Newfoundland to North Carolina). They winter on the Atlantic Ocean and Gulf of Mexico coasts from North Carolina to Mexico and in the Bahamas. North Dakota is the most important state in terms of annual recruitment for the Great Plains population of piping plovers. In 1991, there were an estimated 496 breeding pairs in North Dakota and in 1996 that number dropped to 399 breeding pairs (Mann-Klager 2011). The population continued to drop until 2001 when a multi-year drought exposed large portions of the Missouri River basin expanding the nesting habitat. Between 2004 and 2008, North Dakota had exceeded the population goal of 650 nesting pairs of piping plovers in the state with nearly 900 pairs observed in 2008. This is due in a large part to the numbers of nesting pairs along the Missouri River. Since 1998, the goal of 100 nesting pairs along the Missouri River has been exceeded, with a maximum count of 550 pairs in 2005 (USFWS 2009a).

The USFWS designated critical habitat for the Great Plains population of piping plovers in 2002. Critical habitat was designated in North Dakota, Nebraska, and South Dakota and includes midstream sandbars of the Missouri and Yellowstone rivers and along shorelines of saline wetlands. Within the FBIR, the ESA designated critical habitat for piping plovers consists of all of the Lake Sakakawea shoreline (Figure 3.9-1). No alkaline wetlands ESA designated critical habitat exists within the boundary of the FBIR.

Lake Sakakawea is the first significant breeding area for piping plovers along the Missouri River system. In 2008, the estimated number of piping plover nests on Lake Sakakawea ranged from 86 nests (counted by USGS survey research crews) to 138 nests (counted by U.S. Army Corps. of Engineers monitoring crews) (study site ranged from the Garrison Dam to 178 river miles northwest, which extends outside of the FBIR) (Shaffer et al. 2013). In the years leading up to this study, water levels of the lake had been declining as a consequence of below-average snowfall in the northern Rocky Mountains. The lake shoreline was used increasingly by nesting piping plovers between 1998 and 2005 and the lake experienced record low water levels and very high use by piping plovers in 2005. While the entire shoreline of Lake Sakakawea may be used by piping plovers, important areas include Steinke Bay, Douglas Creek Bay, the Van Hook Arm, Little Egypt, and Tobacco Garden Bay (USFWS 2000).

3.9.1.10 Rufa Red Knot

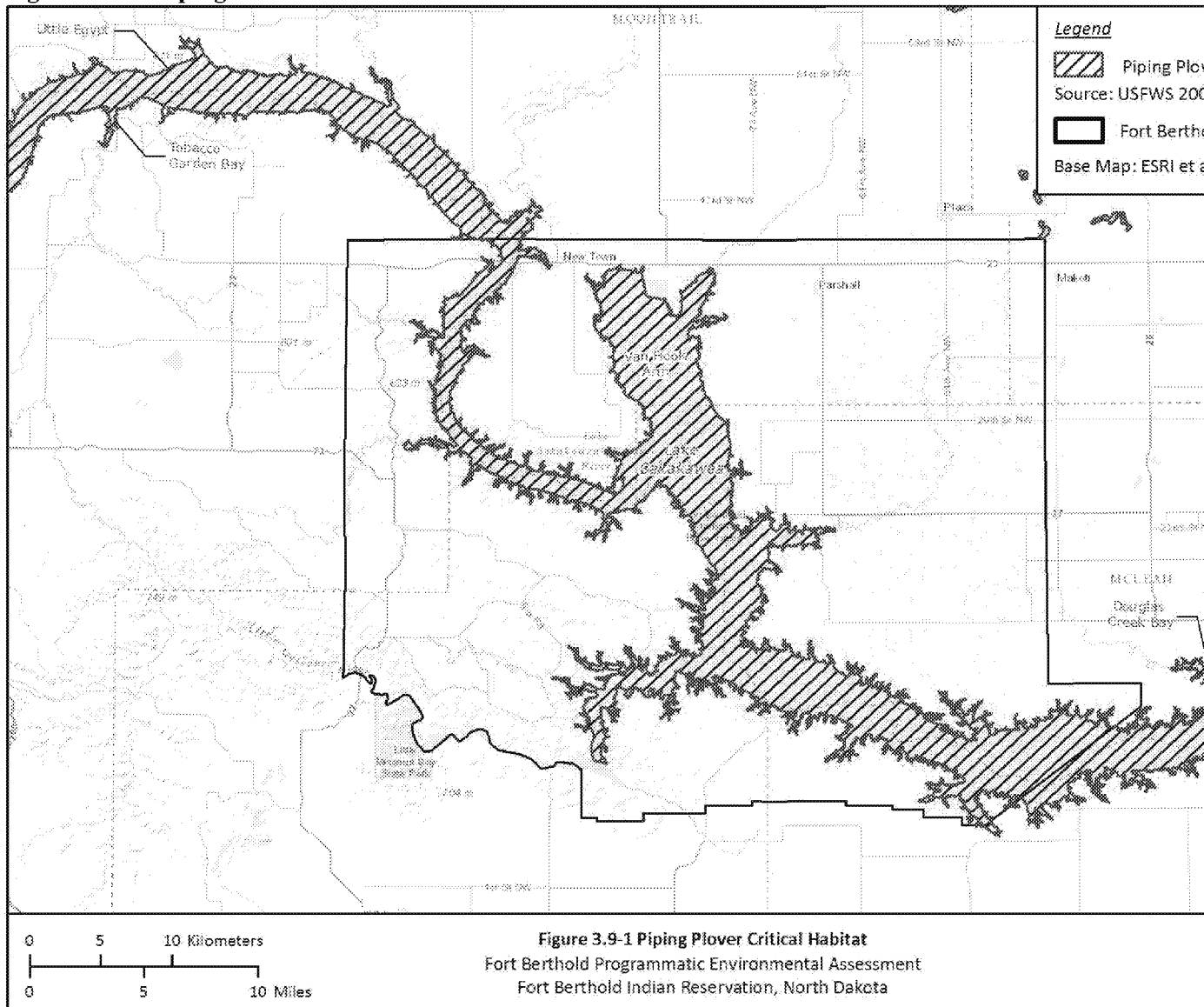
Life History

The rufa red knot is a medium sized shorebird about 9 to 11 inches in height. This species is easily recognized during breeding season because of the red plumage found on its face, prominent strip above the eye, breast, and upper belly. The feathers on the lower belly and under the tail are whitish with dark flecks. Female red knots have similar coloring to males, but less intense. Nonbreeding plumage is dusky gray and white. The weight of the red knot varies by season with a low in the winter of approximately 4 ounces, and a high in the summer of approximately 7 ounces (USFWS 2013c). Red knots can live up to 25 years, but very few live more than 7 years (Niles et al. 2009).

The current geographic distribution of the red knot has not changed from its historical distribution. The rufa red knot breeds in the Canadian Arctic and migrates approximately 19,000 miles to winter on the U.S. Gulf Coast and in South America. During the breeding season, red knots generally nest in dry, slightly elevated tundra locations, on windswept slopes with little vegetation in the Canadian Arctic. Female red knots typically lay one clutch of eggs per season consisting of four eggs. Incubation lasts 22 days. Their diet in the arctic consists of terrestrial invertebrates, grass shoots, seeds, and other vegetable matter (Baker et al. 2013).

The rufa red knot generally prefers sandy, gravel, or cobble beaches, tidal mudflats, salt marshes, shallow coastal impoundments, and lagoons for its migration and wintering habitat. The red knot's diet during migration is similar to what it eats while wintering; hard-shelled mollusks supplemented by softer invertebrate prey such as shrimp, crab, marine worms, and horseshoe crab eggs (USFWS 2013c).

Figure 3.9-1. Piping Plover Critical Habitat



Current Status and Range-wide Distribution

The rufa red knot was listed as threatened under the ESA on January 12, 2015 (79 FR 73706). In some areas, the rufa red knot population has declined 75 percent since the 1980s, with the steepest declines occurring after 2000. A primary factor in the recent decline of the species was reduced food supplies in Delaware Bay due to commercial harvest of horseshoe crabs. It is also losing areas along its range due to sea level rise, shoreline projects, and development (USFWS 2013d).

Rufa red knots occur primarily along the ocean coasts during migration; however, a small number have been reported across the interior of the U.S. during migration. These sightings are concentrated along the Great Lakes, yet multiple reports have been made from nearly every interior state (eBird.org 2012). Though, information is lacking on the specific noncoastal stopover habitats used by red knots. The closest reported sighting of a rufa red knot was approximately 80 miles east of FBIR in 1998, in Wells County, North Dakota (eBird.org 2014).

3.9.2 Impacts to Threatened, Endangered, and Candidate Species

3.9.2.1 Alternative A - Proposed Action

Black-footed Ferret

Since no black-footed ferrets are known to occur on the FBIR, or in North Dakota, the Proposed Action would not affect this species. Additionally, no areas in North Dakota are considered suitable for the potential reintroduction of ferrets and existing prairie dog complexes would need to be expanded before reintroductions could occur (Hagen et al. 2005).

If any well pads, roads, or other related construction or infrastructure occur near existing prairie dog complexes on the FBIR, it may reduce the potential for these areas to be used for future reintroductions.

Based on the analysis of the Proposed Action, the current status of the black-footed ferret in the FBIR and other existing and future land uses in the area, it is determined that implementation of the Proposed Action would have no effect on the black-footed ferret.

Gray Wolf

While gray wolves have been observed in the region, no packs are known to have become established in North Dakota, and most of the observed individuals are likely dispersing from Minnesota and Canada. Due to the highly mobile nature of the gray wolf, individuals may be found in the FBIR, but no reports have been made in the last 25 years (NDGFD 2013a). These individuals would likely be found in localized forested habitats (i.e., wooded draws); only 7 percent of the Project Area includes potential wooded draws and forested habitat. Because wolves require large areas of relatively undisturbed habitat with low human activity, development of additional well pads, roads, and other infrastructure could be a potential impact and result in wolves avoiding these areas of disturbance. Additional roads and traffic associated with the Proposed Action could potentially result in mortality from vehicle collisions.

The majority of gray wolf prey consists of large ungulates which may be affected by oil and gas development. Large game species have been shown to be adversely affected by oil and gas development through a number of ways, including habitat fragmentation and avoidance of developed areas (Dyke et al. 2011). This could be a potential impact on wolves by altering their prey base. Nonetheless, there are no

established wolf ranges or known reports of occurrence in the Project Area, so these impacts are not likely to affect gray wolves.

Based on the analysis of the Proposed Action, the current status of the gray wolf in the FBIR and other existing and future land uses in the area, it is determined that implementation of the Proposed Action would have no effect on the gray wolf.

Interior Least Tern

Impacts to interior least terns from the Proposed Action would occur primarily due to habitat degradation and disturbance from increased personnel in the area. Construction of well pads, roads, or other facilities in least tern habitat would result in the direct loss of suitable breeding areas and foraging habitat in the FBIR. However, with mitigation measures required by BIA to protect Lake Sakakawea and wetlands, the potential least tern habitat as described below is not likely to be impacted.

In order to determine effects to potential least tern habitat, for this analysis, BIA used least tern habitat data obtained from USGS (2004) and NDGFD (2013b). Predicted distribution and potential mapped habitat indicates approximately 315,593 acres of least tern habitat (NDGFD 2013b), the most conservative amount of habitat is found on FBIR. Of these acres, 100 percent would be protected by mitigation measures including avoidance of development and/or the required use of closed-loop systems that the Operators would comply with (Section 2.5).

These data (above) were used for this analysis because BIA believes it is the best scientific and commercial data available concerning the effect of the Proposed Action on least tern and associated nesting and foraging habitat areas. Further, these data seem to overestimate potential habitat for least tern since only a small number of least terns nest at Lake Sakakawea as of 2013 (discussed in Section 3.9.1.3) (Shaffer et al. 2013).

Spills could also be another impact that could potentially degrade habitat and affect invertebrate and fish populations that least terns feed on. Spills could include a release of produced oil, chemicals from oil and gas operations, or produced water. BIA conducted a spill analysis of incident data which can be found in Appendix H. Section 2.5 provides protective mitigation measures that would prevent or reduce the potential effects to potential least tern habitat, along with other spill prevention mitigation measures. Because of these mitigation measures, there is a low likelihood of spills reaching a waterbody, including Lake Sakakawea; therefore, it is not likely that spills would affect least terns.

Based on the analysis of the Proposed Action, the current status of the interior least tern in the FBIR, and incorporation of avoidance, minimization, and mitigation measures in Section 2.5 and/or in the BIA COAs (Appendix K), it is determined that implementation of the Proposed Action may affect, but is not likely to adversely affect the interior least tern.

Pallid Sturgeon

In North Dakota, there are several potential impacts from oil and gas development on aquatic resources, including pallid sturgeon. One of the biggest impacts is the potential effect from oil and gas related spills. Water usage may also affect pallid sturgeon by altering water levels or flow. Within the Project Area, pallid sturgeon are found solely in Lake Sakakawea and not in any of its tributaries.

The most critical impact to pallid sturgeon from the Proposed Action would be potential contamination of Lake Sakakawea from spills. At many points during oil and gas operations, some types of potentially

hazardous materials are present. While contaminants have been noted in pallid sturgeon previously, the effects of these contaminants are poorly understood (USFWS 2007c). However, fish have several mechanisms to cope with PAHs, including the use of metabolizing enzymes. They can metabolize PAHs through oxidation, reduction, hydrolysis, and reactions from various enzymes (e.g., cytochrome P450 monooxygenase) (Tuvikene 1995).

Additionally, in portions of the Missouri River, contaminants found include mercury, cadmium, selenium, and polychlorinated biphenyls (i.e., PCBs). The source of the mercury concentrations is due to complex interaction between multiple variables, including fluctuations in lake levels. Oil and gas-related withdrawals from Lake Sakakawea, however, are unlikely to significantly change lake levels (EPA 2013c).

The potential for spills to affect pallid sturgeon depends on the location of the spill in relation to Lake Sakakawea or its tributaries. In order to assess potential effects of potential spills to pallid sturgeon, BIA conducted a spill analysis of incident data, which can be found in Appendix H. Section 2.5 provides protective mitigation measures that would prevent or reduce the potential effects to pallid sturgeon habitat, along with other spill prevention mitigation measures.

Another potential impact to pallid sturgeon from oil and gas development is the amount of water drawn for development activities. Water intakes would be considered on a case-by-case basis and not within the Proposed Action. Each well drilled would require approximately 55,000 bbls of water (J. Hunt, Chief, Branch of Engineering, Division of Energy and Mineral Resources, Assistant Secretary – Indian Affairs, pers. comm.). Therefore, for the total amount of water potentially used throughout the life of the project is an estimated 95,700,000 bbls. While water management will always be a concern to the management of Lake Sakakawea, its full pool volume is approximately 250 billion bbls (23.8 million acre-feet). Therefore, if water is drawn from Lake Sakakawea directly or from water wells hydrologically connected to the reservoir, the Proposed Action would use approximately 0.04 percent of the volume of the lake. This would not affect the pallid sturgeon.

Based on the analysis of the Proposed Action, the current status of the pallid sturgeon in the FBIR, other existing and future land uses in the area, and incorporation of avoidance, minimization, and mitigation measures in Section 2.5 and/or in the BIA COAs (Appendix K), it is determined that implementation of the Proposed Action may affect, but is not likely to adversely affect the pallid sturgeon.

Poweshiek Skipperling

While the Poweshiek skipperling has historically been observed in the state, the most recent observation was over 200 miles from the FBIR. Because, the Poweshiek skipperling is not known or believed to occur in any of the counties in the Project Area (USFWS 2014c) and the dispersal distance of the species is strongly limited (1 mile) (R. Westwood, University of Winnipeg, pers. comm., August 2012; R. Dana, pers. comm., 2012), individuals are not expected to occur on or near the FBIR.

Based on the analysis of the Proposed Action, the current status of the poweshiek skipperling in the FBIR, other existing migration habitat, existing and future land uses in the area, and incorporation of avoidance, minimization, and mitigation measures in Section 2.5 and/or in the BIA COAs (Appendix K), it is determined that implementation of the Proposed Action would have no effect on the Poweshiek skipperling.

Whooping Crane

Whooping cranes have been documented on the FBIR; therefore, the proposed project would have the potential to affect whooping cranes. As discussed in Section 3.9.1.8, the highest source of mortality for fledged whooping cranes is collision with electric utility lines (Towner 2011). Collisions with electric utility lines (and other structures) are considered a potential impact because whooping cranes are not a highly maneuverable species. The Proposed Action would require up to 348 miles of new electrical utility lines, which would increase the potential for collisions if these lines are not buried below ground. To mitigate for this potential impact, all new electric utility lines that are directly associated with the well pads would be buried. Existing electric utility lines would be allowed to remain above ground.

Another potential impact to whooping cranes could occur from the loss of migration habitat. While whooping cranes use a variety of habitats during migration, they are found primarily in palustrine wetland and cropland areas. Studies have shown that whooping cranes are sensitive to disturbance from human activities, therefore oil and gas development activities, including the Proposed Action in the vicinity of roosting cranes, would have the potential to disturb them. Whooping cranes will also avoid areas of existing development, thereby potentially denying them the use of important habitat (CWS and USFWS 2007). Studies on whooping crane migration habitat and use, and the potential effects of development on habitat quality, point to an inverse relationship between disturbance level and habitat value (Austin and Richert 2005; USFWS 2009b). Removal or modification of stopover habitat could result in increased mortality or reduced vigor to individuals if whooping cranes are forced to use suboptimal habitat; or distances may be lengthened between available stopover sites during migration and force whooping cranes to use extra energy (Towner 2012).

In order to assess potential indirect effects to whooping cranes and loss of migration habitat, BIA conducted an analysis to evaluate the likelihood of occurrence of whooping crane stopover on two portions of the FBIR. This evaluation method incorporated the location of the FBIR in the migration corridor, the presence of feeding and roosting sites, and the availability of habitat within the FBIR compared to two different portions considered in the surrounding landscape (west and east of the Bakken Fairway). Further details of the analysis can be found in the Programmatic BABE (BIA 2014). From the analysis, it is reasonable to think that because potential roosting and foraging habitat is not limited in the surrounding landscape, relative to the eastern portion of the FBIR (17,416 acres [67 percent] of potential wetland-agricultural matrix in the eastern portion), it is not likely that whooping crane roosting and foraging habitat would be significantly affected from the Proposed Action.

Another potential impact that could affect whooping cranes would be from spills of hazardous materials or produced oil, if a spill occurred. Spills could include a release of produced oil, chemicals from oil and gas operations, or produced water. In order to assess potential effects to whooping crane potential habitat by spills, BIA considered the potential habitat that could be affected by oil spills, if they occurred. Also, BIA conducted a spill analysis of incident data, which can be found in Appendix H. Section 2.5 provides mitigation measures that would prevent or reduce the potential effects to potential stopover habitat along with other spill prevention mitigation measures (note that in the Programmatic BABE (BIA 2014), mitigation measures are referred to as *conservation measures*). Because of these measures, there is a low likelihood of spills reaching a waterbody, including wetlands; therefore, it is not likely that spills would affect whooping cranes.

Based on the analysis of the Proposed Action, the current status of the whooping crane in the FBIR, other existing migration habitat, existing and future land uses in the area, and incorporation of avoidance, minimization, and mitigation measures in Section 2.5 and/or in the BIA COAs (Appendix K), it is determined that implementation of the Proposed Action may affect, but is not likely to adversely affect the whooping crane.

Dakota Skipper

The greatest potential impact to the Dakota skipper is the loss or degradation of its habitat (Cochrane and Delphay 2002). Dakota skipper habitat may be converted from native prairie for various agricultural purposes, mining, and other development. Habitat degradation may occur from grazing, invasion of exotic and nonnative species, and pest control. Within the Project Area, most of the land located north and east of Lake Sakakawea has been converted to cropland and no longer provides quality habitat. Throughout the entire Project Area, approximately 34 percent is classified as grassland systems, mostly in the southern and western portions (USGS 2010).

The primary threats and stressor categories from the Proposed Action are described below, and can be found in Appendix B of the Programmatic BABE (BIA 2014) and in the Revised Programmatic BABE Addendum (BIA 2015). The greatest potential stressor to the Dakota skipper is the loss or degradation of its habitat (Cochrane and Delphay 2002). Dakota skipper habitat may be converted from native prairie to land used for various agricultural purposes, mining, and other development. Habitat degradation may occur from grazing, invasion of nonnative species, and pest control. Within the Project Area, most of the land located north and east of Lake Sakakawea has been converted to cropland and no longer provides quality habitat. Approximately 34 percent of the Project Area is classified as grassland ecosystems based on desktop data, and these grasslands are largely located in the southern and western portions (USGS 2010).

To examine the extent of potential effects to potential Dakota Skipper habitat, the BIA developed a desktop screening approach in combination with programmatic procedures to ensure that sites with a higher likelihood of Dakota skipper occupancy will be avoided, particularly in unbroken native prairie believed to contain the key plant species needed to support the species. As recommended by USFWS (2015d), this desktop screening approach will be used prior to siting, permitting, and construction activities under the Proposed Action. Using the best available scientific and publicly available data (at the time of writing this report), a series of coarse-to-fine scaled filters (or data layers) were used within a GIS to identify and map potential Dakota skipper habitat quality within the FBIR landscape. Called the Dakota Skipper HSM, this modeling approach produced a map that classified the entire FBIR landscape into polygons that indicate potential locations for possible habitat and possible high quality habitat, along with areas where habitat is not present or not likely to be present. A follow-up screening of the FBIR landscape was completed to characterize the area according to the presence or absence of prior disturbance. The purpose of this secondary screening was to rapidly identify areas that contain small patches of prairie in an otherwise developed landscape where the likelihood of the species being present is discountable (per USFWS recommendation [K. Shelley, North Dakota State Supervisor, USFWS North Dakota Ecological Services Office, pers. comm., September 2015]). Each proposed well pad location under the Proposed Action will be overlaid on each map (as applicable) to determine the next steps following the desktop review. Recognizing that this is a desktop screening tool, each habitat type will also be field-verified with different levels of survey requirements, depending upon habitat suitability as determined in the field. In areas where

desktop and/or field verification suggest that possible high quality habitat is present, field survey requirements will be more comprehensive.

Field-verified high quality habitat would not be modified or lost unless Dakota skipper occupancy surveys result in no Dakota skipper observations, per USFWS (2015a) requirements; or the prairie habitat areas impacted are less than or equal to 0.25 acre and not within 0.62 mile from a larger prairie complex. Additionally, development is not allowed or viable in some areas within the FBIR. Of the 3,780 acres of possible high quality habitat identified from the HSM, approximately 870 acres (23 percent) are protected from development due to the restriction that no drilling or production activities will occur within the first 1,000 feet from Lake Sakakawea (1,854 feet MSL). Additionally, the Proposed Action is focused on development on the western portion of FBIR, as it is likely that there would not be any development east of the Bakken Fairway boundary because of the current understanding of the oil reserves. Approximately 1,450 acres of possible high quality habitat (38 percent of 3,780 acres) are within the eastern portion, where development is not likely.

Reclamation of disturbed areas could restore the suitability of an area for Dakota skippers, depending on the disturbance. Such areas might include habitat where interim reclamation would be implemented; Section 2.5 provides mitigation measures that would reduce any potential effects to Dakota skippers' habitat.

Another potential impact from the Proposed Action could occur from the introduction of noxious weeds. To mitigate against the potential effects to Dakota skippers from invasive species and disturbed areas, the Proposed Action includes mitigation measures (Section 2.5) that are consistent with the Dakota Skipper Guidelines (USFWS 2007d and 2013e).

Based on the analysis of the Proposed Action, the current status of the Dakota skipper in the FBIR, other existing and future land uses in the area, and incorporation of avoidance, minimization, and mitigation measures in Section 2.5 and/or in the BIA COAs (Appendix K), it is determined that implementation of the Proposed Action may affect, but not likely to adversely affect the Dakota skipper.

Northern Long-eared Bat

No known occurrences of the northern long-eared bat have occurred in the Project Area; occurrences have been document only in the state (recent summer surveys in North Dakota documented the species only in the Turtle Mountains, the Missouri River Valley, and in the Badlands). However, North Dakota Heritage Inventory does not have any record of the northern long-eared bat occurring in North Dakota (C. Dirk, North Dakota Natural Resource Division, pers. comm.).

Even though no other threat to the northern long-eared bat is as severe as the white-nose syndrome, other sources of mortality, though not observed to cause significant population declines, include impacts to hibernacula and loss or degradation of its summer habitat (USFWS 2013b). If the long-eared bat is present in the FBIR, though it has never been observed, impacts from the Proposed Action could impact its habitat.

Generally, North Dakota has no deposits of thick carbonate rocks at or near the surface except for the Killdeer Mountains in North Dakota. There are several features in the state that have historically been referred to as caves and are located south/southwest of the FBIR (Murphy 2007). There are no known

hibernacula within North Dakota though there is very limited survey effort in the state (H. Riddle, USFWS – North Dakota Ecological Services Office, pers. comm., 2012).

If the long-eared bat is present in the FBIR, another impact from the construction of well pads, roads, or other facilities in northern long-eared bat's summer habitat would result in the direct loss of suitable summer and foraging habitat. The long-eared bat requires forested hillsides and ridges for its summer and foraging habitat; however, 7 percent (73,768 acres) of the Project Area is of woodland habitat. The onsite meeting and review process/evaluation of each location requires woody vegetation be avoided to the extent possible, thus the potential to disturb woody vegetation is minimal and not likely to occur under the Proposed Action. If specific sized diameter trees cannot be avoided between April and September, then a survey would be conducted to confirm the absence of the northern long-eared bat.

Based on the analysis of the Proposed Action, the current status of the northern long-eared bat in the FBIR, other existing and future land uses in the area, and incorporation of avoidance, minimization, and mitigation measures in Section 2.5 and/or in the BIA COAs (Appendix K), it is determined that implementation of the Proposed Action would have no effect on the northern long-eared bat under the ESA.

Piping Plover

The primary impacts to piping plovers from the Proposed Action would occur primarily from habitat degradation and disturbance from increased personnel in the area. Direct effects are not well documented (Atkinson and Dood 2006).

Piping plovers are known to be sensitive to human disturbance, both directly and indirectly. Nests and eggs may be inadvertently crushed by personnel or vehicles. People or vehicles may also inhibit the piping plovers' territorial establishment or courtship. If disturbance occurs after the establishment of a nest, adults may abandon the nest, leaving the eggs or chicks vulnerable to temperature extremes or predators (Atkinson and Dood 2006).

To assess the potential impacts to piping plover designated critical habitat, data obtained from USFWS (2011h) was mapped and is shown in Figure 3.9-1. Approximately 173,872 acres of piping plover designated critical habitat is found on FBIR. Of these acres, 100 percent would be protected by mitigation measures that the Operators would comply with (Section 2.5).

The creation of approximately 348 miles of new roadway throughout the FBIR would have the potential to increase mortality of piping plovers from vehicle strikes. Piping plover mortality from vehicle strikes has been documented on a road immediately east of the FBIR that divides Lake Sakakawea and Lake Audubon (USFWS 2009a). This road crosses the lake and is surrounded by alkaline wetlands. As the locations of the proposed wells and associated access roads are not currently known, it is difficult to assess the total effect that the roads would have on piping plovers. There are currently 2,000 miles of roadway on the FBIR so the addition of 348 miles would represent a 17 percent increase in the total amount of roadway (Hall 2011a). Assuming that the 348 miles of anticipated road development would occur throughout the entire FBIR and given that the majority of piping plover habitat in the FBIR is associated with Lake Sakakawea, where roads would not be built and the protective mitigation measures that would be in place (Section 2.5), the effects to piping plovers would be low.

The Proposed Action would also include the potential to increase the number of predators in piping plover habitat. The generation of trash during construction would have the potential to attract species such as coyote, red fox, raccoon, and American crow, and artificially increase their populations on the FBIR. Predation is a known impact to piping plovers and in some areas of North Dakota is responsible for 89 to 95 percent of egg failures (Prindiville 1986). Removal of vegetation from project-related activities would also increase predation on piping plovers by removing cover habitat (USFWS 2009a). To reduce any effects from increased predators, the Operators would comply with mitigation measures described in Section 2.5 and/or in the BIA COAs (Appendix K).

Spills could also be another impact that could potentially degrade habitat and affect invertebrate and fish populations that piping plovers feed on. Spills could include a release of produced oil, chemicals from oil and gas operations, or produced water. In order to assess the potential impacts to piping plover designated critical habitat by spills, Figure 3.9-1 shows the potential designated critical habitat that could be affected by oil spills, if they occurred, along with the protective mitigation measures that would be complied with within their habitat. Also, BIA conducted a spill analysis of incident data which can be found in Appendix H. Section 2.5 provides protective mitigation measures that would prevent or reduce the potential effects to designated critical habitat, along with other spill prevention mitigation measures. Because of these measures, there is a low likelihood of spills reaching a waterbody, including Lake Sakakawea; therefore, it is not likely that spills would affect piping plovers.

Based on the analysis of the Proposed Action, the current status of the piping plover in the FBIR, other existing and future land uses in the area, and incorporation of avoidance, minimization, and mitigation measures in Section 2.5 and/or in the BIA COAs (Appendix K), it is determined that implementation of the Proposed Action may affect, but is not likely to adversely affect the piping plover or the designated critical habitat for the piping plover.

Rufa Red Knot

There are no known occurrences of the rufa red knot in the Project Area. The closest reported sighting of a red knot was approximately 80 miles east of FBIR in 1998 in North Dakota (eBird.org 2014). However, North Dakota Heritage Inventory does not have any record of the rufa red knot occurring in North Dakota (C. Dirk, North Dakota Natural Resource Division, pers. comm.).

If the rufa red knot possibly traverses the FBIR during migration, the greatest potential impact from the Proposed Action is the loss or degradation of its potential migration habitat, habitat similar to piping plover habitat. Even though the primary factor in the recent decline of the rufa red knot was reduced food supplies in Delaware Bay, the loss of habitat due to sea level rise, shoreline projects, and development also impacts the species (USFWS 2013d). Therefore, construction of well pads, roads, or other facilities in migratory habitat would result in the direct loss of suitable migratory habitat if the species traversed over FBIR. Though information is lacking on the specific noncoastal stopover habitats used by red knots (USFWS 2013d), potential migratory habitat within the Project Area could include sandy, gravel, or cobble beaches. This is similar habitat to the piping plover habitat (for foraging mollusks and other invertebrates) and shown in Figure 3.9-1. Of these acres, 100 percent would be protected by mitigation measures including avoidance of development or the required use of closed-loop systems with which the Operators would comply (Section 2.5).

Additionally, if the species used FBIR as stopover habitat, the red knot has the potential to be exposed to oil spills and leaks throughout its migration. Potential impacts from spills could degrade habitat and affect mollusks and invertebrate populations that red knots feed on. Spills could include a release of produced oil, chemicals from oil and gas operations, or produced water. BIA conducted a spill analysis of incident data which can be found in Appendix H. Section 2.5 provides protective mitigation measures that would prevent or reduce the potential effects to potential red knot habitat, along with other spill prevention mitigation measures. Because of these prevention and protective mitigation measures, there is a low likelihood of spills reaching a waterbody, including Lake Sakakawea; therefore, it is not likely that spills would affect red knots.

Based on the analysis of the Proposed Action, the current status of the rufa red knot in the FBIR, other existing and future land uses in the area, and incorporation of avoidance, minimization, or mitigation measures in Section 2.5 and/or in the BIA COAs (Appendix K), it is determined that implementation of the Proposed Action would have no effect on the rufa red knot.

3.9.2.2 Alternative B - No Action

Potential impacts to federally listed threatened and endangered species, and candidates for such listing, under the No Action Alternative would be similar to those under the Proposed Action, although the magnitude of habitat loss and potential for disturbance and harassment of individual animals would be less. Most direct surface disturbance would still be upland habitats under the No Action Alternative. In addition, indirect impacts on occupied habitat from such disturbances as hazardous spills, soil erosion, accidental fire, and introductions of invasive weeds would be proportionally much less. While Operators under the No Action Alternative would be drilling and maintaining well pad facilities on fee lands that are not under immediate federal oversight, they would still be required to adhere to regulatory stipulations described in the Federal ESA, which prohibits intentional or incidental take of any listed species, including harassment, or destruction of occupied habitat. To remain in non-violation status under the ESA, Operators of drill rigs and well facilities on private fee lands would need to undertake precautionary mitigation measures to avoid take or harassment of federally listed species and impacts to occupied habitat. This would include proper siting of new facilities and roads to avoid impacting occupied or potentially suitable habitat, implementing precautionary mitigation measures to prevent spills of hazardous materials and contaminants in areas where listed species may exist, and seasonal limitations on work to limit noise and visual disturbance during critical times of the year.

3.9.3 Mitigation Measures

The mitigation measures listed in Section 2.5 and/or in Appendix K would be implemented under the Proposed Action and would reduce potential impacts to federally listed species.

3.10 CULTURAL RESOURCES

Cultural resources, or historic properties, must be taken into account under the provisions of the NHPA in the process of authorizing oil and gas exploration projects on the FBIR in northwestern North Dakota. Historic properties, or cultural resources, on federal or tribal lands are protected by many laws, regulations and agreements. The NHPA (16 U.S.C. § 470 *et seq.*) Section 106 requires, for any federal, federally assisted, or federally licensed undertaking, that the federal agency take into account the effect of that undertaking on any district, site, building, structure or object that is included in the National Register before

the expenditure of any federal funds or the issuance of any federal license. Cultural resources is a broad term encompassing sites, objects, or practices of archaeological, historical, cultural, and religious significance. Eligibility criteria (36 CFR 60.6) include association with important events or people in our history, distinctive construction or artistic characteristics, and either a record of yielding or a potential to yield information important in prehistory or history. In practice, properties are generally not eligible for listing on the National Register if they lack diagnostic artifacts, subsurface remains or structural features, but those considered eligible are treated as though they were listed on the National Register, even when no formal nomination has been filed. This process of taking into account an undertaking's effect on historic properties is known as *Section 106 review*, or more commonly as a cultural resource inventory.

As a general rule, historic properties are greater than 50 years of age and can be present within landscapes as districts, sites, or isolated finds. Districts are groups of buildings, structures, and sites that are linked historically by function, theme, or physical development. The individual buildings, structures, and sites are most often contiguous but they can also be non-contiguous. Sites are the locations of a significant event, or of historical human occupation or activity. They are identified by the presence of artifacts and/or features within a given space. Sites may have the capacity to yield important information about aspects of human history and cultures. Isolated finds are characterized by solitary artifacts or sparse groupings of a few artifacts within a given space. They generally lack potential to yield information on human history and culture but can be significant for other reasons (Little et al. 2000).

In addition, the Archaeological and Historic Preservation Act of 1974 provides for the survey, recovery, and preservation of significant scientific, prehistoric, archaeological, or paleontological data when such data may be destroyed or irreparably lost due to a federal, federally licensed, or federally funded project. Special protections are afforded to human remains, funerary objects, and objects of cultural patrimony under the Native American Graves Protection and Repatriation Act.

The area of potential effect (APE) of any federal undertaking must also be evaluated for significance to Native Americans from a cultural and religious standpoint. Sites and practices may be eligible for protection under the American Indian Religious Freedom Act of 1978 (AIRFA). Sacred sites may be identified by a tribe or an authoritative individual (Executive Order 13007). However, guidance provided by the Advisory Council on Historic Preservation notes that TCPs are defined only in NPS guidance (Parker and King 1998) and are not referenced in any statute or regulation. Accordingly, such properties, defined by NPS as being associated with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community, do not fall under any statutory authority of the BIA. Thus, it is solely the prerogative of the tribe, as represented by the THPO, to determine whether and when TCP surveys would be undertaken, which persons are qualified and authorized to conduct such surveys, what kinds of properties are to be considered as TCPs, and what information about TCPs might be shared and with whom. As there is no legal basis for the BIA to require such surveys to be conducted nor that information about TCPs be included in any NEPA documents, they will not be considered further in this Mitigated PEA. However, these and other culturally sensitive locations called Areas of Native American Concern, which may or may not be considered eligible for nomination to the National Register, may still be protected under AIRFA. All historic properties within the FBIR constitute the affected environment for cultural resources. In accordance with 16 U.S.C. 470h(a), information concerning the nature and location of archaeological resources and TCPs, and detailed information regarding archaeological and cultural resources, is

confidential. Such information is exempt from the Freedom of Information Act and is not included in this Mitigated PEA.

Whatever the nature of the cultural resource addressed by a particular statute or tradition, implementing procedures invariably includes consultation requirements at various stages of a federal undertaking. The MHA Nation has designated a THPO by Tribal Council resolution, whose office and functions are certified by the NPS. The THPO operates with the same authority exercised in most of the rest of North Dakota by the State Historic Preservation Office (SHPO). Thus, BIA consults and corresponds with the THPO regarding cultural resources on all projects proposed within the exterior boundaries of the FBIR.

3.10.1 Existing Cultural Resources

Under the North Dakota Comprehensive Plan for Historic Properties: Archaeological Component, the State of North Dakota is divided into 13 study units based on different orders of drainage basins. The FBIR is primarily located within the Garrison Study Unit with the southwestern portion of the FBIR located within the Little Missouri River Study Unit (Gregg et al. 2008). The Garrison Study Unit encompasses 8,063 square miles of land along the Missouri River, upriver from the Garrison Dam. The culture history of the Unit extends back at least 11,000 years to the Clovis culture (Gregg and Bleier 2008a). The Little Missouri River Study Area encompasses 4,767 square miles of land along the Little Missouri River in the extreme western portion of the state and includes the Little Missouri Badlands. The cultural history of this Unit extends back at least 11,000 years to the Clovis culture as well. The Garrison Study Unit is qualitatively categorized as having medium-high site density and the Little Missouri River Unit is qualitatively categorized as having high site density. Both units are evaluated as having a high number of sites per acre surveyed (Gregg et al. 2008).

Of the 13 study units, the Garrison Study Unit ranks fourth for site density with one site recorded for every 3.4 square miles. The wooded draws on the north-facing slopes of the Missouri River valley and the surrounding upland areas within the Unit contain an abundance of floral and faunal resources that would have attracted human occupation. The Missouri River provides a reliable water source and numerous tributary drainages occur along its extent within the Unit. Soils are deep and well-formed over a majority of the Unit. Glacial fill and alluvial gravels at several locations within the Unit contain an abundance of lithic raw materials for the manufacture of stone tools. Stone circles and other rock features account for more than half of the sites that have been recorded in the Unit. Artifact scatters are also quite numerous in the Unit and are the second most frequently recorded site type. Landforms in the Unit include glaciated uplands, breaks, valley wall side slopes and footslopes, coulees, alluvial terraces, and floodplains. Archaeological sites are found on all of these landforms. They are found most frequently on ridges, hills/knolls/bluffs, and terraces. A majority of the inventories that have been completed in the Unit have been conducted along the Garrison Reservoir and Lake Sakakawea shorelines, in the BLM's Coal Study Areas of western North Dakota, and along the Northern Border Pipeline (Gregg and Bleier 2008a).

The Little Missouri River Study Unit ranks third for site density with one site recorded for every 2.4 square miles inventoried. It contains a wide variety of high quality lithic raw materials for the production of stone tools, occurring as surface stream gravels and near surface lag gravel deposits that cover the elevated landforms. The Unit also contains a number of tributary drainages, most of which only carry water for a few weeks each year. The larger, more extensive drainages are believed to be older than the smaller ones and may therefore contain older archaeological remains. Generally, soils are quite thin in the Unit, with

pre-Pleistocene sediments capping many of the elevated landforms. Buried soils can be found in some areas, especially on the lee sides of hills and ridges and in swales in upland areas. These areas have the best potential for containing buried cultural resources. The vast majority of the sites recorded in the Unit are artifact scatters with roughly equal numbers of hearth sites, stone circle sites, and other rock feature (non-stone circles) sites. Landforms present are similar to those in the Garrison Study Unit with a greater number of buttes and ridges, particularly in the badlands in the southern portion of the Unit. Archaeological sites are found on all of the landforms, but the vast majority of them have been found on ridges, hills/knolls/bluffs, and on terraces. A majority of the large inventories completed in the Unit have been conducted in the badlands in the southern portion of the Unit. These include inventories of BLM Coal Study Areas; inventories of large block areas for energy-related projects; long linear surveys for pipelines; and inventories on USFS lands and the Theodore Roosevelt National Park (Gregg and Bleier 2008b).

The archaeological record in the FBIR extends back to at least 11,000 years before present. The Moe site is a multi-component site located on the banks of Lake Sakakawea, near New Town, that contains cultural materials from the Clovis period (11,000-12,000 years before present). There are numerous large villages associated with the Plains Village period (1,000-2,000 years before present) and historic period (1780-present) sites. A total of 26 historic properties listed on the National Register are within the six counties (McKenzie, Mountrail, Dunn, McLean, Mercer, and Ward) that include parts of the FBIR. Of these, only one (Evans site) is located on the FBIR, near New Town.

The BIA Great Plains Region database indicates that, since 1980, more than 780 cultural surveys have been conducted on the FBIR covering more than 19,500 acres. The majority of these cultural resource inventories have been for compliance with Section 106 of the NHPA and NEPA for oil and gas related projects. The inventories have been conducted primarily for oil and gas development projects including well pads, access roads, pipelines, seismic lines, storage yards, tank batteries, and compressor stations.

According to the North Dakota SHPO database, a total of 1,719 sites and site leads have been documented to date within the FBIR, along with 23 historic buildings and 648 isolated finds. Site leads are the suspected locations of cultural resources as reported by non-professionals, and the locations of reported isolated finds that are suspected to be just the surface expression of subsurface archaeological sites (State Historical Society of North Dakota [SHSND] 2006). Sites are defined by the North Dakota SHPO as, *a location of past human activity that took place over 50 years ago and which left physical traces of that activity in the form of (1) intact cultural features (2) five or more artifacts within 60 meters of each other, and/or (3) an intact subsurface cultural deposit regardless of the number of artifacts* (SHSND 2006). Isolated finds are defined by the SHPO as, *four or fewer artifacts representing an area of very limited past activity* (SHSND 2006).

Of the 1,719 sites, the majority (n=1,370, [where n is the number]) are prehistoric archaeological sites and site leads. The remaining sites consist of historic sites and site leads (n=219), historic architectural sites and site leads (n=71), and historic archaeological sites and site leads (n=59). Prehistoric archaeological sites consist of the remains of past human activity that occurred prior to contact between Native American populations and Euroamerican populations (generally prior to 1780). Historic archaeological sites consist of the remains of past human activity that occurred after contact between Native American populations and Euroamerican populations (generally after 1780). Archaeological sites are sites that contain artifacts and features, and the remains of structures and buildings which are no longer standing (i.e., collapsed or

removed). Architectural sites are sites that consist of standing buildings and structures that housed some form of human activity.

The prehistoric sites on the FBIR include lithic scatters, quarries, open camps, tipi rings, and village sites. Historic sites include town sites, farms/farmsteads, railroads, historic trails/roads, recreation areas, mines/quarries, forts/cantonments, steamboat landings, and suspected camp sites associated with the Lewis and Clark expedition. Historic archaeological sites include the remains of farmsteads, dwellings, structures, cemeteries/mortuaries, monuments/shrines, gas/oil wells, landfills, treatment plants, stables/barns, and churches. Historic architectural sites consist of standing churches, town halls, bridges, warehouses/commercial buildings, dance halls, courthouses, libraries, post offices, city halls, fellowship halls (granges), barns/stables, and dwellings.

In general, three variables are analyzed when assessing the potential for archaeological sites. The variables are (1) proximity to necessary resources such as water, food, fuel, and construction materials; (2) soil characteristics such as drainage capabilities and erodibility; and (3) landform characteristics such as slope and aspect (Barclay et al. 2005). Using these considerations, the best potential for archaeological sites is on land forms in proximity to primary sources of water, food sources, fuel, and construction materials; have associated soils with good drainage characteristics and are not likely to erode; and possess level or gentle slopes. Land forms with these characteristics that occur on the FBIR include terraces, floodplains, and alluvial fans. The potential for archaeological sites is more limited on slopes and in upland areas (Barclay et al. 2005).

A majority of the sites (n=1,062) and site leads that have been documented on the FBIR are located within 1 mile of Lake Sakakawea and its primary tributary, the Little Missouri River. A majority of the archaeological sites are associated with deep to very deep, well-drained soils with low to moderate susceptibility to wind and water erosion, and which have formed primarily in terrace, alluvial, and glacial till deposits. The primary soil associations with which the archaeological sites are associated include the Rhoades-Cabba-Amor soil association, which is found over 14 percent of the FBIR, in the southwestern portion south of Lake Sakakawea, and the Zahl-Williams-Harriet-Cabba association that is primarily found near Lake Sakakawea and makes up 6 percent of the FBIR. A large number of archaeological sites are also associated with the Cabba series soils that form on hills, escarpments, and sedimentary plains and are found on the western portion of the FBIR. A large number of archaeological sites have also been drowned by Lake Sakakawea. Archaeological sites on the FBIR are found on mean slopes that range from 0 to 69.5 percent. A majority of the sites (58 percent), however, are on nearly level terrain to gentle slopes with mean slopes ranging from 0 to 10 percent (Barclay et al. 2005).

3.10.2 Impacts to Cultural Resources

3.10.2.1 Alternative A - Proposed Action

Due to the programmatic nature of the Proposed Action, specific development areas are not known. However, once specific development proposals for anticipated development under the Proposed Action are received, they would be tiered to this Mitigated PEA with individual onsite meetings for each action with additional mitigation measures identified within the onsite checklist (Appendix B).

Potential impacts to cultural resources from oil and gas development associated with the Proposed Action would be of two types. The first is direct physical impacts to a building, structure, site, or object. Direct

impacts to cultural resources may include destruction of or damage to archaeological and historical resources as a result of surface and subsurface disturbance during construction operations. Direct impacts could also include erosion of cultural resource properties, siltation resulting in burying or degradation of cultural resource sites, and visual impacts to historic buildings, structures, or prehistoric rock art sites.

The risk of direct impacts from specific development proposals would be avoided or minimized through conducting file searches and cultural surveys, onsite meetings conducted early in the process after the NOS is submitted to the BIA and BLM, and implementation of mitigation measures in Section 2.5 and/or in the BIA COAs (Appendix K).

A file search and consultation with the THPO regarding potential TCPs and Areas of Native American Concern would be conducted prior to an intensive pedestrian inventory of all development under the Proposed Action. To avoid potential direct physical impacts to cultural resources, all proposed well locations, access roads, and pipeline ROWs, would be inventoried for cultural resources to current BIA standards. A 10-acre block would be inventoried, at a minimum, for each well pad location, and a 200-foot wide corridor would be surveyed, at a minimum, for access road ROWs and utility corridors to the well locations. If an eligible and/or unevaluated cultural site is observed during the preconstruction survey, the site would be avoided by a minimum of 75 feet (as specified by THPO) (Section 2.5). If previously unidentified human remains, funerary objects, sacred objects, or objects of cultural patrimony are inadvertently discovered during construction, all work would cease, the BIA and THPO would immediately be notified, and the site would be secured from further disturbance. Activities would not resume until the BIA archaeologist and THPO provide written approval to resume work. In addition, the BIA has a Plan of Action (Murdy 2015) that outlines the procedures that would be instituted if unidentified human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered. An onsite meeting would be conducted for each project at which the field archaeologist that performed the cultural survey, or a designated representative, would be present. At the onsite meetings, cultural resource issues would be disclosed and impact avoidance, minimization, and mitigation measures developed.

The second type of impact is indirect impacts. Indirect impacts could include damage or destruction of cultural resources as a result of increased human activity in an otherwise remote area during drilling and production, and as a result of improved public access to these areas provided by new access roads. Vandalism of cultural resources, particularly prehistoric rock art, and unauthorized collection at archaeological sites, are also potential indirect, long-term effects. The Proposed Action would result in an increased numbers of workers on the FBIR during well field development and operation, which would increase the potential for vandalism and unauthorized collection.

Overall, the effects of the Proposed Action on cultural resources located on the FBIR are determined by the BIA in consultation with the THPO as part of the Section 106 process under the implementing regulations (36 CFR Part 800) of the NHPA. Under Section 106, there are three types of effects that are defined: (1) no effect (2), no adverse effect, and (3) adverse effect. A no effect determination is given if there are no historic properties (i.e., cultural resources eligible for inclusion in the National Register) located within the APE of the project. A no adverse effect determination is given if there are historic properties within the APE of the project, but the project would not negatively affect those characteristics which cause it to be considered eligible for the National Register. An adverse effect determination means that the project would have a negative effect on a historic property by impacting those characteristics that cause the site to be

considered eligible for the National Register. Adverse effects on cultural resources are generally avoided through project relocation/redesign or through various mitigation measures identified in Section 2.5 and/or in the BIA COAs (Appendix K).

Oil and gas related development within the Little Missouri Study Unit in the southwestern portion of the FBIR would be the most likely to impact cultural resources under the Proposed Action. Site densities are considered high within the Unit, and are also higher than other areas of the FBIR. Both the Garrison Study Unit and the Little Missouri Study Unit are considered to have a high number of sites per area surveyed (Gregg et al. 2008). The Little Missouri Study Unit, however, ranks third in the state for site density while the Garrison Unit ranks fourth (Gregg and Bleier 2008a and 2008b). Sensitive land forms (e.g., terraces, alluvial fans, elevated areas, etc.) along Lake Sakakawea and the Little Missouri River within both units have the highest density of archaeological sites within the FBIR. File searches and surveys conducted prior to the initiation of construction would identify the presence of cultural sites. Any eligible and/or unevaluated sites that are observed during the survey would be avoided by a minimum of 75 feet (as specified by THPO). However, the TAT has the authority to set additional mitigation measures through tribal resolutions as a Sovereign Nation. If any mitigation measures within this document are less restrictive than requirements set by tribal resolutions, Operators would be required to consult with the Tribal authorities for clarification and seek a waiver before proceeding with the action.

The analyses conducted for this Mitigated PEA identified no significant effects to cultural resources under the Proposed Action, considering the implementation of the mitigation measures in Section 2.5 and/or in the BIA COAs (Appendix K).

3.10.2.2 Alternative B - No Action Alternative

Under the No Action Alternative oil and gas development would only occur on private surface and minerals. Cultural surveys are not required to be conducted on private lands. However, all lands within the exterior boundary of the FBIR are considered *tribal lands* regardless of ownership (private or tribal). Therefore, the THPO could request that the private landowner conduct a cultural survey and, if the landowner agrees, a cultural survey would be conducted. The impacts to cultural resources on private lands would be the same as those under the Proposed Action, but greatly reduced because of the fewer number of wells and associated development that would occur. If a cultural survey is conducted and eligible and/or unevaluated cultural resources are observed, they would be avoided by a minimum of 75 feet (as specified by THPO) (see Section 2.5). If a cultural site is inadvertently discovered during construction, all work would cease immediately and the THPO would be contacted. Work would not resume until the THPO gives its approval to proceed.

3.10.3 Mitigation Measures

Mitigation measures that would be implemented for cultural resources are found in Section 2.5 and/or in the BIA COAs (Appendix K).

3.11 SOCIOECONOMICS

The study area for direct socioeconomic effects includes the FBIR, with a focus on those areas that have been and would be directly affected by oil and gas development. The study area for indirect effects includes parts of Dunn, McLean, McKenzie, and Mountrail counties. Williston's role as the regional oil and gas

U.S. Department of the Interior Bureau of Land Management

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September 2017

Marathon Oil Company Proposed Oil Wells

**Irish Pad: Four Dances USA 41-25TFH
Gretchen USA 11-30TFH-2B
Irish USA 41-25TFH
Sheldon USA 11-30TFH
Snowman USA 41-25H
Sec. 30, T 152N, R 93W
McKenzie County, ND**

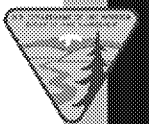
**Waltom Pad: Prior USA 42-8TFH
Ranum USA 44-8TFH
Walcel USA 42-8H
Sec. 8, T 151N, R 93W
Mountrail County, ND**

Location: Lot 1, Section 30, Township 152 North, Range 93 West; NESE, Section 8, Township 151 North, Range 93 West

Leases: 14-20-A04-8341, 14-20-A04-9001, 14-20-A04-2311

Applicant/Address: Marathon Oil Company
3172 HWY 22 N
Dickinson, ND 58601

U.S. Department of the Interior
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CHAPTER 1

INTRODUCTION

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This Environmental Assessment (EA) has been prepared by the Bureau of Land Management North Dakota Field Office to analyze Marathon Oil Company's (Marathon) Applications for Permit to Drill (APDs), including roads, well pads, and associated infrastructure. The surface is privately owned within the (exterior) boundary of the Fort Berthold Indian Reservation (FBIR). Mineral ownership directly below the proposed well locations is privately held (fee). The horizontal portion of the well bore would penetrate Indian minerals (14-20-A04-8341, 14-20-A04-9001, and 14-20-A04-2311). The well information is as follows:

<u>Well Identification</u>	<u>Legal Location</u>	<u>Lease Number</u>
Four Dances USA 41-25TFH	Lot 1, Sec. 30, T152N, R93W	14-20-A04-8341
Gretchen USA 11-30TFH-2B	Lot 1, Sec. 30, T152N, R93W	14-20-A04-9001
Irish USA 41-25TFH	Lot 1, Sec. 30, T152N, R93W	14-20-A04-8341
Sheldon USA 11-30TFH	Lot 1, Sec. 30, T152N, R93W	14-20-A04-9001
Snowman USA 41-25H	Lot 1, Sec. 30, T152N, R93W	14-20-A04-8341
Prior USA 42-8TFH	NESE, Sec. 8, T151N, R93W	14-20-A04-2311
Ranum USA 44-8TFH	NESE, Sec. 8, T151N, R93W	14-20-A04-2311
Walcel USA 42-8H	NESE, Sec. 8, T151N, R93W	14-20-A04-2311

The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions.

BACKGROUND

The proposed oil and gas wells would be drilled from one existing well pad and a new multiple well pad that would be drilled into Indian mineral lease 14-20-A04-8341, 14-20-A04-9001, and 14-20-A04-2311. The description of the operator Proposed Actions and analysis contained in the EA depicts the proposed wells and the environmental effects available to the BLM at the time of this analysis.

The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions.

CONFORMANCE WITH LAND USE PLAN

The FBIR does not have a Land Use Plan. A lease grants the right to explore, extract, remove, and dispose of oil and gas deposits that may be found on the leased lands. The lessee may exercise the rights conveyed by the lease, subject to lease terms and any lease stipulations and permit approval requirements. This environmental analysis and permit approval is in conformance with requirements found in the National Environmental Policy Act (NEPA), the

Indian Mineral Leasing Act, 25 CFR 211, 212, 225, 43 CFR 3160 and BLM MOU-MT920-0121.

The Indian Mineral Leasing Act subjects all oil and gas operations on trust or restricted Indian lands to the Secretary of the Interior's regulations. The BIA, BLM and ONNR, as the Secretary of the interiors representatives, have an obligation to act as a trustee for Indian tribes and allottees for Indian mineral resources.

RELATIONSHIP TO STATUTES, REGULATIONS, OTHER PLANS, OR OTHER NEPA DOCUMENTS

This EA has been prepared in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA) and other statutes relevant to the proposal.

North Dakota Field Office Oil and Gas Leasing EA for July 2014
(DOI-BLM-MT-C030-2014-059-EA)

PURPOSE AND NEED FOR THE PROPOSED ACTION

The BLM decision to be made is whether or not to approve the APD. The purpose of the action is to allow the lessee to develop the Indian mineral lease indicated above in an environmentally sound manner. The need for the action is established by BLM Onshore Orders (43 CFR 3160), which require the BLM to review and approve APDs on Federal leases, including those leases with split estate lands. However, the BLM has no jurisdiction over surface impacts on these private lands.

SCOPING AND PUBLIC INVOLVMENT AND ISSUES

The projects were posted at the North Dakota Field Office for review. No issues were identified by the public. The operator has provided certification that they have surface owner's agreements, which were received by the BLM on 5/19/2017 and 5/23/2017. No issues were identified by the surface owners.

The principal goals of scoping are to support public and BLM-internal participation in order to identify issues, concerns and potential impacts that require detailed analysis. APDs were posted in e-planning NEPA register on 4/3/2017 and 3/28/2017, and at the front office of the North Dakota Field Office for 30 days. Information was also posted on the Montana/Dakotas BLM webpage. The EA analyzes the proposed action and discloses potential impacts based upon existing data.

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

DESCRIPTION OF PROPOSED ACTION

Marathon Oil Company (MOC) proposes to drill the following oil wells: Four Dances USA 41-25TFH, Gretchen USA 11-30TFH-2B, Irish USA 41-25TFH, Sheldon USA 11-30TFH, and Snowman USA 41-25H from the new Irish well pad in McKenzie County, ND, and the Prior USA 42-8TFH, Ranum USA 44-8TFH, and Walcel USA 42-8H from the existing Waltom USA 43-8TFH well pad in Mountrail County, ND. The well bores would penetrate into Indian leases 14-20-A04-8341, 14-20-A04-9001, and 14-20-A04-2311. The description of the operator Proposed Action and analysis contained in the EA depicts the proposed wells and the environmental effects available to the BLM at the time of this analysis. Refer to the legal location listed in the Introduction above and Appendix 1 (Maps 1, 3). The wells would be drilled vertically to the Bakken formation and then horizontally in the formation. After the wells are drilled, they would be tested and if commercial quantities of oil or gas are discovered, the wells would be completed for production and piped to production facilities that would be installed on location. Drilling is expected to begin as soon as all necessary permits have been obtained. The drilling operations are expected to take approximately 30 days and the completion operations are expected to take 20 days. The wells would be drilled and completed in full compliance with all applicable laws, regulation (43 CFR 3100), *Onshore Oil and Gas Orders*, the Application for Permit to Drill (APD), and any Conditions of Approval.

Table 1: Summary of the Maximum Proposed Site Dimensions & Disturbance

<i>Well Name(s)</i>	<i>Legal Location</i>	<i>Well Pad</i>	<i>Access Road</i>	<i>Total</i>
Four Dances USA 41-25TFH, Gretchen USA 11-30TFH-2B, Irish USA 41-25TFH, Sheldon USA 11-30TFH, Snowman USA 41-25H	Lot 1, Sec. 30, T152N, R93W	(620'x475') 6.76 acres	(658'x66') 1.0 acres	7.76 acres
Prior USA 42-8TFH, Ranum USA 44-8TFH, Walcel USA 42-8H	NESE, Sec. 8, T151N, R93W	Existing Pad Expansion (225'x475') 2.45 acres	Existing	2.45 acres
Total Disturbance		9.21 acres	1.0 acres	10.21 acres

Well Site Construction

MOC proposes to construct the Irish pad to drill the following oil wells: Four Dances USA 41-25TFH, Gretchen USA 11-30TFH-2B, Irish USA 41-25TFH, Sheldon USA 11-30TFH, and Snowman USA 41-25H in McKenzie County, ND (Figures 1 & 2). The proposed well pad would be constructed to a size of 620 feet by 475 feet with a maximum cut of 15.7 feet and a maximum fill of 15.6 feet. The planned access road would be 658 feet in length, have a 24 foot running surface with a 16 foot sub-grade and a maximum disturbance width of 66 feet. A BLM right-of-

way (ROW) would not be required for these Proposed Actions. No new pipelines are requested in the APD. Surface and subsoil materials in the immediate project area would be used for construction. Scoria and gravel would be used to surface the well pads and access roads, and would be acquired off site from a commercial source. The well pad would be constructed with a minimum of a 24 inch tertiary berm.

MOC proposes to expand the existing Waltom USA 43-8TFH to drill the Prior USA 42-8TFH, Ranum USA 44-8TFH, and Walcel USA 42-8H in Mountrail County, ND. (Figure 3). The existing well pad will be expanded by 130 feet by 420 feet, and 500 feet by 55 feet with a maximum cut of 5.5 feet and a maximum fill of 9.0 feet. The existing access road would be reduced by 115 feet from the pad expansion and would be utilized as is and maintained in the same or better condition. A BLM right-of-way (ROW) would not be required for these Proposed Actions. No new pipelines are requested in the APD. Surface and subsoil materials in the immediate project area would be used for construction. Scoria and gravel would be used to surface the well pads and access roads, and would be acquired off site from a commercial source. The well pad would be constructed with a minimum of a 24 inch tertiary berm.

The total new surface disturbance from the construction of the access roads and new well pad, and well pad expansions would be 10.21 acres and is listed in the table above.

After the wells are drilled, they would be tested and if commercial quantities of oil or gas are discovered, the wells would be completed for production and production facilities would be installed on the well pad and would include pump units, production tanks and flares.

Well Site Drilling

The drilling operations would start upon receipt of an approved applications for permit to drill, and would take approximately 30 days after spudding, followed by additional time for well completion and installation of production facilities. The proposed wells would be vertically drilled with a closed loop system into the Bakken Formation to an approximate depth of 9,500 feet and then drilled horizontally. Surface casing (9 5/8") would be set at approximately 2,000 feet and cemented back to the surface. The wells would then be drilled below the casing. The operator does not anticipate Hydrogen Sulfide gas to be encountered but has submitted an H₂S Contingency Plan for the wells. An appropriately sized Blowout Preventer (BOP) would be used to control the well and prevent an accidental release of hydrocarbons or salt water into the environment.

Fresh water based mud system would be used while drilling down to surface casing setting depth, and an invert mud system (oil based) would be used for drilling the remaining vertical section and the horizontal section of the wells would use a brine drilling fluid. The wells would be fracture stimulated and completed for production if economically recoverable quantities of oil are found.

No water wells would be drilled on location. Fresh water would be hauled from a commercial source along Highway 23 to the location. A centrally located Poseidon tank may be utilized to transport water through temporary layflat hoses placed in existing road borrow ditches to reduce truck traffic.

At the drilling location, drilling cuttings would be hauled off location and disposed of at an approved Disposal Center. Disposal of all solids and liquids (drilling fluids/cuttings, produced water, trash, sewage and chemicals) will meet all state, federal and county requirements. Produced fluids would be placed in test tanks on location. An impermeable berm would be constructed around the test tanks to serve as secondary containment.

The wells would be drilled and completed in full compliance with all applicable laws, regulation (43 CFR 3100), *Onshore Oil and Gas Orders*, the Application for Permit to Drill (APD), and any Conditions of Approval.

Well Site Completion

Bakken wells typically undergo fracture stimulation as part of the well completion process. Fracture stimulation (i.e., hydraulic fracturing or “fracing”) is a process used to maximize the extraction of underground resources by allowing oil or natural gas to move more freely from the rock pores to production wells that brings the oil or gas to the surface. The hydraulically created fracture acts as a conduit in the rock formation, allowing oil or gas to flow more freely through the fracture system, and to the wellbore where the oil or gas is produced to the surface.

To create or enlarge fractures, fluid comprised typically of water and additives is pumped into the productive formation at a gradually increasing rate and pressure. Hydraulic fracturing fluid is approximately 98 percent water and propping agents (proppant), such as sands with the remainder being chemical additives. Chemicals used in stimulation fluids include acids, friction reducers, surfactants, potassium chloride (KCl), gelling agents, scale inhibitors, corrosion inhibitors, antibacterial agents, and pH adjusting agents and typically comprise less than 2% of the total fluid. When the pressure exceeds the rock strength, the fluids create or enlarge fractures that can extend several hundred feet away from the well. As the fractures are created, a propping agent (usually sand) is pumped into the fractures to keep them from closing when the pressure is released. After fracturing is completed, the majority of the injected fracturing fluids returns to the wellbore and is reused or disposed of at an approved disposal facility.

A typical fracture stimulation technique involves 20-30 stages which partition the wellbore into segments which are each separately fracture stimulated. This allows for more efficient use of frac fluid and proppant and a more evenly distributed treatment of the full length of the wellbore. This multi-stage hydraulic fracturing has allowed development of the Bakken formation that was previously uneconomic due to low permeability.

Well Site Production

Production facilities required to operate each oil well include a pumping unit, oil and saltwater tanks, a flare stack and a heater treater would be located on the well pad and produced oil would be transported to the production tanks via flowlines, buried to a depth of four feet within the access road ROW. Recycle pumps, metering equipment, small sheds or enclosures and other miscellaneous equipment would also be installed on the leveled working area of the well pad. Production facilities would be spaced according to minimum safe operating distances. All surface facilities would be painted a flat earth-tone color except facilities requiring high-visibility colors for safety. A dike would be constructed completely around the production facilities

designed to hold fluids. These dikes would be constructed of compacted subsoil, are impervious, and hold 110% capacity of the largest vessel plus one day production volume.

During the production phase, the operator would reduce the pad size to accommodate only the area that is needed for production. All slopes would be re-contoured to gentler grades, stabilized; topsoil spread, grass seeded and drainage would be established. Upon well abandonment, the operator would reclaim the well pad and access road as directed by the surface owner or by the BLM AO if reclamation is inadequate.

NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed wells would not be approved and associated facilities would not be constructed or installed; however, the well pads would be developed for the private wells.

CHAPTER 3 AFFECTED ENVIRONMENT INTRODUCTION AND GENERAL SETTING

The project area lies within the Missouri River Drainage Basin in the Sanish drainage divide area southwest of New Town, on the Sanish Peninsula within the exterior boundary of the Fort Berthold Indian Reservation, North Dakota. The project area is part of the Missouri River Valley and is characterized by rolling hills, open, stream dissected prairie and bluffs along Reunion Bay.

According to the BLM Instructional Memorandum No. 2009-078 for APDs drilling into federal mineral estate from well pads on nonfederal surface and mineral estate locations, this well pad and proposed wells fall under Situation 3 Proposed Surface Well Pad Where Surface Location Is Determined by Downhole Location of Proposed Federal Wells. The obligation to protect the surface, environment, and the interests of the surface owner remain with the surface owner, lessee, operator, and the state of North Dakota. The BLM is responsible for considering the direct, indirect, and cumulative effects of construction and operation.

Air Quality: The proposed well sites and access road are located in a Class II air quality rating area, which is an area that allows moderate degradation above “baseline” including most of the United States. The air will contain some pollution from the oil and gas activities in the oil field within a few miles radius of the wells, including very little hydrogen sulfide gas, some sulfur dioxide gas from venting and flaring activities, and dust particulates from surface-disturbing activities. The nearest Class I air shed is the northeastern portion of the North Unit of Theodore Roosevelt National Park, which is approximately 70 miles southwest of the project area. The dominate wind direction in this area is from the northwest.

Cultural Resources: The Bureau of Land Management is responsible for identifying and evaluating cultural resources located within the area of potential effects, in accordance with the National Historic Preservation Act (NHPA) of 1966, as amended. Cultural resources are defined as districts, sites, buildings, structures, and objects significant in American history, architecture,

archeology, engineering, and culture (36 CFR 60.1), including artifacts, records, remains, and properties of traditional religious and cultural importance to an Indian tribe (36 CFR 800.16(l)(1)). Cultural resources that meet the National Register Criteria for Evaluation and possess integrity of location, design, setting, materials, workmanship, feeling, and association are defined as historic properties (36 CFR 60.4; 36 CFR 800.16(l)(1)).

North Dakota is divided into 13 archaeological study units based on areas with similar history, archaeological sites, and environment (SHSND 2016). A study unit provides a broad overview of the cultural history of a given area; and indicates the potential types, and concentration, of cultural sites. The proposed project is located in the Garrison Study Unit (GSU) of northwestern North Dakota. Sites common to the GSU consist primarily of stone circles, cultural material scatters, and miscellaneous stone features. The majority of sites with temporal affiliations date to the Woodland period (400 BC – AD 1200). Most sites are located on ridge and hill land formations.

The project location had previously been surveyed in 2012. No cultural resources were identified at that time. As the area had been previously covered by Class III pedestrian inventories, the BLM only required an updated Class I report (BLM Project # 17-MT030-48). The Class I report identified 18 previously known cultural sites and four isolated finds within a one mile radius. The closest known site is located over 1,000 feet from the proposed expansion location.

Hydrology: The proposed well site and access road are located in the watershed of the Missouri River and Lake Sakakawea Watershed HUC (10110101). The water quality of surface runoff is determined by the soil chemistry, topography and the quantity of vegetation. Protection of the soil by vegetation is an important component for the prevention of erosion and improvement of the surface water quality. Well vegetated shallow slopes (less than ~3:1) yield runoff which is of relative good quality. Stream chemistry is determined by runoff water mixing with groundwater inputs.

The Fox Hills is typically the area's deepest fresh water aquifer and is geologically isolated from the Bakken/Three Forks formations by multiple massive shale zones and salt zones. Vertical distance between the Bakken/ Three Forks and the base of the Fox Hills is about 7,000-8,000 feet.

The project is located in an area of many prairie potholes to the north, west, and south. The proposed well sites and access roads are located south of New Town, ND approximately 1.0 miles east of the main body of Lake Sakakawea.

Soils: The proposed wells are located in both McKenzie and Mountrail Counties. Soil affected by these actions were identified from the U.S. Department of Agriculture, Natural Resources Conservation Service Soil Survey Geographic (SSURGO) database for McKenzie County and Mountrail County, North Dakota. For the Official Series Description visit: <http://soils.usda.gov/technical/classification/osd/index.html>

Soils in the area of the Proposed Action are primarily 67 percent Zahl-Williams loams (E3555D—Zahl-Williams loams, 9 to 15 percent slopes) which occur on till plains and uplands. These soils are well drained and on slopes of 9 to 15 percent where flooding is non-existent, however available water capacity is high. The ecological site is thin Loamy to Loamy. These soils are found at elevations of 1,650 to 3,600 feet, in areas with mean annual precipitation of 13 to 18 inches and a mean annual air temperature of 39 to 45 degrees F. The land forms are ridges and rises where the depth to restrictive feature is more than 80 inches.

Vegetation: The ecological site information describes the vegetation type for this location as a Northwestern Great Plains Mixed Grass Prairie. This is an ecosystem that occurs continuously for hundreds of square miles, interrupted by drainages, wetland/riparian areas or sand prairies. Vegetation generally consists of annual graminoids and forbs, as well as perennial graminoids such as little bluestem, Blue Grama/western wheatgrass, green needlegrass, prairie sandreed, bluebunch wheatgrass, green needlegrass, plains muhly, as well as forbs and shrubs. Common shrubs in draws and along streams include buffaloberry, chokecherry, snowberry, and sagebrush. Ponderosa pine, juniper, and some aspen occur in North Dakota. The area is suited and used mainly for range, pasture, and crop land.

Current land uses in the project areas include livestock grazing and ranching, cultivated agriculture, oil and gas development, and wildlife habitat.

Visual Resources: This region has low rolling hills and fields covered with prairie vegetation on slopes, and brushes in the draws, or are cultivated croplands. The view shed is consistent with the VRM Class IV Objectives. The objective of this class is to allow for major modifications to the landscape. The level of change to the characteristic landscape should be high.

Wildlife: The proposed projects are located in both McKenzie and Mountrail counties near Lake Sakakawea. The majority of Mountrail county lies with the Missouri Coteau Region of North Dakota is was heavily influenced by glaciation. The glaciation created a landscape that could be characterized by knob and kettle topography that created innumerable shallow basin wetlands. However the proposed actions in Mountrail County are located in an area that is not dominated by the knob and kettle, wetland basin landscape. Rather it is more like the landscape characteristics found in McKenzie County which lies mainly in the Missouri Slope region of ND, and was not heavily influenced by glaciation. This region is generally represented by western mixed grass prairie and is typically grazed if it has not been converted by cultivation. The landscape is often dissected by many “woody” draws that are important to many different wildlife species. Prior agricultural conversion areas generally result in cultivation for wheat. In general, wildlife species that may be found utilizing the three proposed project areas include Mule deer, White-tailed deer, pronghorn, sharp-tailed grouse and numerous migratory birds including – Western Meadowlark, Lark Bunting, Grasshopper Sparrow, Chestnut-collared Longspur, Golden Eagle, Rough legged Hawk and Swainson’s Hawk. The project area does lie within the migratory path of the Endangered Whooping Crane.

CHAPTER 4 ENVIRONMENTAL EFFECTS

PROPOSED ACTION

DIRECT AND INDIRECT EFFECTS

This section analyzes the impacts of the proposed action to those resources described in the affected environment.

Air Quality: Pad construction, drilling, and completion phases would take approximately 60 days. Hydrogen sulfide gas (H₂S) may be encountered in the drilling and production phase. The burning or flaring of H₂S results in the release of sulfur dioxide (SO₂). There may be a period of increased dust during the pad and road construction phase.

Impacts from SO₂ and H₂S are addressed in the Williston Basin Regional Air Quality Study (<https://archive.org/details/willistonbasinre02webe>). This study shows that ambient air quality and PSD Class II air quality are relatively good in the Williston Basin. An operator has the option to flare produced gas for a 30-day period. After that period, the well must be connected to a gas line or the operator must request permanent flaring. The requirement that all produced gas be either captured or flared should mitigate the impacts to air quality due to production operations or well testing. This flaring could be used to mitigate or lessen any impacts.

This EA also incorporates by reference the air/climate change environmental impact analyses and mitigation done in the North Dakota Field Office Oil and Gas Leasing EA which was completed in July 2014 (DOI-BLM-MT-C030-2014-059-EA). This document included the county of Mountrail in the analysis area. Please see page 49-53 and page 71-73 for cumulative impacts.

Cultural: The drilling of an oil well has the potential to alter the characteristics of a significant cultural or historic property by causing destruction, damage, or alterations that diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. The permitted surface disturbing activities can also impact a historic property by introducing visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features.

The North Dakota Field Office (NDFO) sent formal consultation and determination letters to the Tribal Historic Preservation Officer (THPO) of the Three Affiliated Tribes: Mandan, Hidatsa, and Arikara Nation September 1, 2017 with a finding of "No Historic Properties Affected." No response has been received to date.

Hydrology: Using a fresh water mud system and cementing the surface casing string from 2,200 feet back to the surface would protect shallow aquifers. Deeper aquifers and potentially productive hydrocarbon zones would be protected through the use of production casing, and cementing. The producing fractured zone depth is 9000 to 11,000 feet in depth, well below the typical depth of usable ground water. Well bore construction isolates the shallower formations with surface casing set below the base of the Pierre Shale and cemented to the surface. Production casing is set from the surface to the producing formation and is typically cemented to

200' above the Dakota formation. These factors combine to protect usable ground water from the fracking process. Approximately 20 to 30 stimulation stages (every 300 to 500 feet) would be needed for a typical horizontal well bore to fracture stimulate the formation. Each stage requires approximately 1400 barrels of fluid (an average of about 36,000 barrels per well). Stimulation fluid would be disposed of at an approved disposal facility or recycled for reuse or a combination of both.

Surface soils would be susceptible to wind and water erosion during road and well pad construction until placement of scoria or gravel. Surface soils would also be susceptible to wind and water erosion in recontoured areas until vegetation is re-established. Erosion from water may be reduced by installing matting, straw booms/wattles, and berms in the appropriate locations. Erosion rates will return to natural levels once vegetation is reestablished providing living and dead vegetation to protect the soil surface from wind and water. By installing runoff preventive measures and the presence of sediment filtering vegetation between the construction sites and live waters, effects to surface waters would be nearly negligible.

Soils: The construction of the proposed roads and well pads would disturb approximately 10.21 acres. Impacts to soils from the disturbance associated with the wells would be compaction from equipment and vehicle traffic and storage of topsoil and subsoil. Topsoil would be removed from the construction areas and saved for reclamation. The loss of vegetation over this area will also make the soils more susceptible to erosion by both wind and water. Surface soils would be susceptible to wind and water erosion during road and well pad construction until placement of scoria or gravel. Surface soils would also be susceptible to wind and water erosion in re-contoured areas until vegetation is re-established.

These impacts are anticipated to be of short duration and erosion rates will return to natural levels once vegetation is reestablished. During the production phase, the operator would reduce the production pad size to accommodate only the area that is needed for production. All slopes will be recontoured to gentler grades and stabilized and topsoil and drainage will be established. Upon well abandonment, the well pads, roads, and pipelines would be reclaimed in accordance with the surface owner's directions, and the operator's reclamation plan.

Vegetation: About 10.21 acres of vegetation would be removed for construction of the well pad and roads associated with the drilling of the oil wells. This disturbance would present the opportunity for noxious weeds to become invasive and spread, which may be brought in by natural carriers and/or construction equipment. The operator would be responsible for weed control on disturbed areas and areas within the exterior limits of the well pads and access roads. Following construction, production, or abandonment operations, the disturbed areas would be reclaimed, contoured, and seeded, to meet the BLM's requirements to reestablish a vegetation regime that is appropriate for the area. The reclamation measures would help ensure potential impacts from noxious weeds and invasive plants to be minimal. During the production phase, the operator would reduce the well pad size to accommodate only the area that is needed for production. All slopes would be re-contoured to gentler grades and stabilized and topsoil and drainage would be established. Upon well abandonment, the well pad and roads would be reclaimed in accordance with the surface owner's directions, and the operator's reclamation plan.

Wildlife: Approximately 10.21 acres will be disturbed completing all of the proposed actions. One of the actions are expansions of an existing pad, while the Irish pad is new and will disturb approximately 7 acres of previously farmed ground. Construction, drilling, production and/or vehicle traffic would result in permanently or temporary displacement of some wildlife species including migratory bird species associated with this habitat. Mortality of some relatively small, immobile species may occur as a result of construction. On a landscape basis, new roads and well pads would contribute to additional habitat fragmentation and dispersion of certain wildlife species. A loss of habitat for nesting, foraging, breeding, and cover for those species of wildlife associated with these habitat types would occur during the life of the well, which may include migratory bird species.

The proposed project area is not considered prime habitat for whooping crane feeding or roosting. However, there is a COA in place should whooping cranes be sighted in the area.

A Dakota Skipper habitat survey was conducted by KLJ in 2017. The survey indicated the native prairie plant species the Dakota Skipper does require for its lifecycle were not present on the proposed locations. The site was dominated by non-native plants and did not have the habitat suitable for the lifecycle of the skipper. Appendix D of the section 7 guidance published by the USFWS indicated in order for the habitat to be considered quality Dakota Skipper habitat the non-native invasive plants need to occur in less than 5% of the area. In addition the proposed location is a considerable distance from any known positive Dakota Skipper occupied areas.

A no effects determination has been made for the following T and E species that are listed for Mountrail and McKenzie counties: Interior Least Tern, Black-footed ferret, Pallid sturgeon, Gray wolf, Piping plover, Rufa red knot, and the Northern long-eared bat.

NO ACTION DIRECT AND INDIRECT EFFECTS

Under the No Action alternative, the BLM would not authorize any construction, drilling or production activities needed for the oil wells proposed to enter and produce from the Federal and Indian lease. Consequently, there would not be any additional impacts to the environment. However, there would be continuing impacts from existing disturbances from farming, ongoing reclamation, infrastructure construction and installation, and other related surface disturbing activities in the area.

Minerals: Under this Alternative, if BLM does not approve the applications, portions of the Indian lease and Federal lease would not produce. No production from the Federal lease would result in the loss of additional oil being added to the market place, and loss of royalties to the Federal and State governments. An analysis of the oil production in the area indicates an average oil well would produce approximately 500,000 barrels of oil during the life of a well. By choosing this alternative we would be denying the opportunity to produce approximately 4,000,000 barrels for the nation.

CUMULATIVE EFFECTS

Development in the area was analyzed in this environmental assessment using a one-mile radius applied around the proposed wells to determine the potential cumulative impact upon the environment. Application of the one-mile radius indicates that there are twenty-six existing wells present around the proposed Irish well pad in McKenzie County, ND (Refer to Map 2). Application of the one-mile radius indicates that there are eleven existing wells present around the existing Waltom well pad in Mountrail County, ND (Refer to Map 4).

The proposed wells (Irish Pad) Four Dances USA 41-25TFH, Gretchen USA 11-30TFH-2B, Irish USA 41-25TFH, Sheldon USA 11-30TFH, and Snowman USA 41-25H in McKenzie County, ND, and the Prior USA 42-8TFH, Ranum USA 44-8TFH, Walcel USA 42-8H in Mountrail County, ND, are located in an area of both perennial and annual vegetation, surrounded by agriculture and grasslands at a much broader scale. The proposed well sites and surrounding area serves as wildlife habitat for a variety of species. The addition of the proposed wells and constructed access routes will impact individual wildlife species but will add negligible stress to the population level; however, the result of all past actions coupled with these actions would increase the extent of stressors on the native fauna within the area.

Cumulative effects from implementing the Proposed Actions are anticipated for air quality for a period of less than five years. If flaring of casing head gas is required to produce these wells, there could be long term minor impacts to air for the life of the well (about 20 years). In addition, both short term (<5 years) and long term (>5 years) effects are expected for soils, range, vegetation, hydrology, and wildlife. Short term (<5 years) impacts from the action would include soil erosion, reduction of vegetative cover which would result in wind and water erosion, increased potential for spread of noxious weeds in the area; additional habitat fragmentation, and permanent or temporary displacement of some wildlife species including migratory bird species. These impacts would be reduced once interim reclamation is completed. Long term (>5 years) cumulative impacts that are reasonably foreseen from existing and proposed activities include an increase in habitat fragmentation on a landscape scale and an increase in revenue for the state of North Dakota and the federal government. These impacts would be reduced when the well is plugged and abandoned, and final reclamation is completed.

Water resources have been impacted by the cumulative effects of activities that occur, including agriculture, mineral exploration and development, and pollution. There would be continuing impacts from existing disturbances from oil wells, ongoing reclamation, pipeline installation, construction and other related surface disturbing activities in the area. As a result of the latter, existing activities, erosion, sedimentation, and run-off may persist to some degree. These impacts decrease watershed health and water quality.

Over the last 10 years, advances in multi-stage and multi-zone hydraulic fracturing has allowed development of oil and gas fields that previously were uneconomic. These drilling and fracturing completion techniques have resulted in a very large cumulative increase in oil and gas production from the Bakken and Three Forks formations in the Williston basin of North Dakota, Montana, and Canada.

Both existing and future energy development would continue to have direct and indirect habitat impacts. Existing development will continue to affect vegetation growth and seedling growth as a result of mechanical disturbance and possibly the introduction of invasive species into the area. Prairie habitat is increasingly being lost or fragmented in North Dakota. On a landscape scale, these small isolated areas of direct and indirect disturbance will further reduce connectivity of wildlife habitats. To prevent additional or limit habitat fragmentation, oil companies have proposed to install multiple wells at a single well pad location, accessed by one road. Commercial success at any new well might result in additional oil/gas exploration proposals. Cumulative impacts that are reasonably foreseen from existing and proposed activities include impacts from habitat fragmentation on a landscape scale and impacts from an improved economy for western North Dakota.

CHAPTER 5 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED

Table 2: Tribes, Individuals, Organizations, or Agencies Consulted		
<i>Name/Agency</i>	<i>Authority</i>	<i>Result</i>
The surface owners-Private.	BLM requires that the Operator engage the Surface Owner in negotiations for the purpose of obtaining a surface owner agreement or waiver for access.	Surface use agreements or certifications were received on 5/19/2017 and 5/23/2017.
Elgin Crows Breast, Tribal Historic Preservation Officer, Three Affiliated Tribes: Mandan, Hidatsa, and Arikara.	NHPA	No responses received to date.

CHAPTER 6 LIST OF PREPARERS

Table 3: List of Preparers			
<i>Reviewer</i>	<i>Title</i>	<i>Assignment</i>	<i>Date/Initials</i>
Lori Ford	NRS	Minerals, Project Lead	LMF 10/3/2017
Paul Kelley	NRS	NEPA Review	PWK 10/18/17
Tim Zachmeier	Wildlife Biologist	Wildlife Resources	TPZ 10/4/2017
Annette Neubert	Archaeologist	Cultural Resources	AEN 10/10/17
Kathleen Bockness	Env. Coordinator	NEPA Review	KMB 10/19/2017

REFERENCES

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), Lake Sakakawea 10110101 8-Digit Hydrologic Unit Profile, August 2008.

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), Web Soil Survey Online, September 26, 2017:

<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

U.S. Bureau of Land Management (BLM). North Dakota Resource Management Plan and Record of Decision, 1988, amended September 21, 2015. North Dakota Field Office, Dickinson, North Dakota.

U.S. Department of Interior, Bureau of Land Management (BLM). 2012, Application For Permit To Drill Or Re-enter (APD) Marathon Oil Company's Four Dances USA 41-25TFH

U.S. Department of Interior, Bureau of Land Management (BLM). 2012, Application For Permit To Drill Or Re-enter (APD) Marathon Oil Company's Gretchen USA 11-30TFH-2B

U.S. Department of Interior, Bureau of Land Management (BLM). 2012, Application For Permit To Drill Or Re-enter (APD) Marathon Oil Company's Irish USA 41-25TFH

U.S. Department of Interior, Bureau of Land Management (BLM). 2012, Application For Permit To Drill Or Re-enter (APD) Marathon Oil Company's Sheldon USA 11-30TFH

U.S. Department of Interior, Bureau of Land Management (BLM). 2012, Application For Permit To Drill Or Re-enter (APD) Marathon Oil Company's Snowman USA 41-25H

U.S. Department of Interior, Bureau of Land Management (BLM). 2012, Application For Permit To Drill Or Re-enter (APD) Marathon Oil Company's Prior USA 42-8TFH

U.S. Department of Interior, Bureau of Land Management (BLM). 2012, Application For Permit To Drill Or Re-enter (APD) Marathon Oil Company's Ranum USA 44-8TFH

U.S. Department of Interior, Bureau of Land Management (BLM). 2012, Application For Permit To Drill Or Re-enter (APD) Marathon Oil Company's Walcel USA 42-8H

ATTACHMENT 1

CONDITIONS OF APPROVAL

SURFACE CONDITIONS OF APPROVAL

I. CONSTRUCTION AND DRILLING OPERATIONS:

- A. A complete copy of the approved (APD), including conditions, stipulations, exhibits, and the H2S contingency plan (if required) must be on the well site and available for reference during the construction and drilling phases.
- B. Notification requirements:
 - 1. Verbally notify this office of the following actions:
 - a. At least 24 hours prior to beginning road and location construction.
 - 2. Prior approval for abandonment must be obtained from the Authorized Officer. For verbal plugging orders on drilling locations, notify this office prior to plugging.

BLM representatives can be reached Monday through Friday (8:00AM - 4:30PM) at the office telephone no. (701) 227-7700. The BLM personnel can be contacted after hours or on weekends for plugging approvals or any other approvals/change in plans which do not allow for communications during normal office hours by calling the following personnel.

<u>Name</u>	<u>Home/Cell Telephone</u>
On Call 24 Hr. Cellular Phone	701-290-8220 (c)
Natural Resource Specialist As Assigned	701-227-7700 (o)

II. GENERAL REQUIREMENTS

- 1. Notify BLM at 701-227-7700 or email your assigned NRS at least 24 hours prior to any construction and reclamation, including reshaping the location or road and topsoil spreading.
- 2. If a tank battery is constructed on location, each tank setting, treater, and separator, must be surrounded on all sides by an impermeable dike of sufficient capacity to adequately contain 100% of the contents of the largest vessel within it, plus one (1) day's production. **Load lines must end inside the dike and have adequate drip containment catch basins.**
- 3. A "closed loop system" shall be used to manage all drilling fluids and cuttings. Disposal of fluids, drill cuttings and other solid wastes shall not occur on-site. Open pits, reserve and drill/cuttings pits will not be constructed.

4. The operator must immediately notify Tribal Historic Preservation Officer (THPO) and BLM if unexpected cultural resources are observed and may not destroy these resources. Disturbance of such discoveries is not allowed until the operator is directed to proceed by the BLM.
5. The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 *et seq.*) prohibits the taking, killing, possession, and transportation (among other actions) of migratory birds, their eggs, parts and nests, except when specifically permitted by regulations. You are required to take all necessary measures practical, between February 1 and July 15 to avoid all “take” during construction, drilling, production and reclamation of this well. If a nesting migratory bird is identified utilizing the proposed project area prior to any construction activity, please notify this office for further guidance.
6. All open containers and/or pits which may contain any fluids shall be netted or screened to prevent unwanted wildlife entry. Including but not limited to recycle pump catch basins, secondary chemical containment structures.
7. Heater treater, incinerator and combustor exhaust stacks shall be fitted with an “exhaust cone” to prevent mortality to bats and nesting birds.
8. All aboveground facilities must be painted shale green within 6 months of well completion, unless approved otherwise by BLM.
9. During drilling, there will be a 2’ berm surrounding the invert tanks in the event of a spill.
10. Best Management Practices including matting, tackifiers, straw mulch, and fiber rolls shall be used to aid in prevention of soil erosion. Fill slopes shall be covered in matting immediately. Topsoil shall also be covered in matting and seeded to prevent erosion and maintain fertility.
11. Flares shall be fitted with a device to prevent oil from being emitted into the air or off location.
12. Production facilities must be located as close to well head as possible and placed in a manner that facilitates interim reclamation of the cut and fill slopes (3:1 slopes is optimal) of the well pad. Place production tanks on the "cut" portion of the pad, except where interim reclamation re-contouring would preclude that placement. All facilities shall comply with API RP 12 R1. Contact BLM, North Dakota Field Office for onsite meeting prior to facility placement.
13. Other waste, trash, and chemicals may not be disposed of or burned on location.
14. Saltwater or testing tanks must be located and/or diked so that any spilled fluids will go into the reserve pit. Saltwater and diesel tanks may not be placed on topsoil stockpiles.

15. The operator is responsible for the prevention and suppression of fires on all lands, which are caused by their employees, contractors, or subcontractors.
16. The operator will implement "Safety and Emergency Plan." The operator's safety director will ensure its compliance.
17. All containers that hold liquids need to have secondary containment in case of leakage. Including but not limited to, recycle pumps, chemical barrels....etc)

III. CONSTRUCTION REQUIREMENTS

1. The permittee shall protect all public land survey monuments, private property corners, and SMA boundary markers. In the event that any such land markers or monuments are destroyed in the exercise of the privileges authorized by this permit, depending on the type of monument destroyed, the permittee shall reestablish or reference the same in accordance with the following: (1) procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," (2) specifications of the county surveyor, or (3) the specifications of the SMA.
2. A ramp-over at the pad entrance shall be constructed to prevent fluids from leaving the pad if the pad sits higher in elevation than the road.
3. The permittee is responsible for locating and protecting existing pipelines, power lines, and telephone lines.
4. The road, borrow ditches, cuts, fills, cattle guards, and fences must be kept in a safe and usable manner and be maintained to original construction standards.
5. All vehicular traffic, personnel movement, construction/restoration operations should be confined to the area examined and approved, and to the existing roadways and/or evaluated access routes.
6. All operator employees and/or authorized personnel (sub-contractors) in the field will have approved applicable APD's and ROW permits/authorizations on their person(s) during all phases of construction.
7. Install and maintain cattle guards and gates in all fences as needed.
8. Install and maintain culverts as needed.

IV. RECLAMATION REQUIREMENTS

1. A Sundry Notice, approved by the BLM, is required if interim reclamation will not take place within 6 months after well completion.
2. When plugging the well, a steel plate dry hole marker welded to surface casing at least 4 ft.

below re-contoured ground is required, and must contain the same information as the well sign as directed by 43 CFR 3162.6 (30 CFR 221.22).

3. If the location and road are built but no well drilled, both must be reclaimed, or BLM and landowner approved erosion controls built within 90 days after site construction. If the well is a producer, or plugged and abandoned, all reclamation must be completed within 6 months after drilling or as set by BLM. Seeding must be done according to measure 6. (below) and should wait until the next seeding period, if a seeding period does not fall within the 6 month reclamation period.

When the well is completed, reclaim, re-contour cut and fill slopes, rip compacted subsoil, spread topsoil and reseed during the next spring or fall seeding period, the road ditches and the portion of the location not needed for production. A pre-work meeting with a BLM representative, to develop an interim reclamation plan, is required.

Reclamation may be postponed by BLM during winter freeze-up.

When the well is plugged, the operator must contact BLM for development of the final reclamation plan and for approval of the reclamation work.

4. If the well is temporarily abandoned, location reclamation may be postponed for as long as the well is temporarily abandoned, but erosion and weeds must be controlled.
5. When the well is plugged and abandoned, remove the surfacing from the location and road and bury it at least 3 feet deep in the location (not in the reserve pit area), or reuse the material elsewhere. Re-contour the location, rip subsoil, spread topsoil, remove fences and reseed as required.
6. A native grass seed a mix specified by BLM, or a landowner's mix, must be utilized. Grass species need to be premixed prior to drilling and certified weed free seed is required. A native seed mix is provided below.

1. Western Wheatgrass	2 lbs/acre
2. Green Needle Grass	6.5 lbs/acre
3. Slender Wheatgrass	2 lbs/acre
4. Side oats Grama	2.5 lbs/acre

7. Seedbed preparation should be free of competing vegetation, including all noxious weeds. A firm seedbed is essential so seed is placed at the designed depth by the drill. Seeding should take place during spring or fall.
8. Spring seeding is highly encouraged. If fall dormant seeding is unavoidable, seeding may take place after November 1st, or once the soil temperature drops to 40 degrees Fahrenheit for a minimum of 5 consecutive days. Fall seeding areas must be covered with a noxious weed seed-free straw or mulch. The above dates may be adjusted plus or minus 5-days if justified by moisture and temperature conditions.

9. Seeding depths need to be $\frac{1}{4}$ " to $\frac{3}{4}$ ", utilizing a drill with 4-6" row spacing. If broadcasting the seed, utilize two times the rates listed in # 6 above and drag it into the soil. Grass drilling shall follow all contours to avoid creating artificial watercourses.
10. All seeding rates will be based on pure live seed (PLS).
11. All seed must meet the requirements of the BIA, North Dakota State Seed Laws and Regulations. Appropriate documentation must be provided to the BLM ND Field Office before seeding.

V. INFORMATIONAL NOTICE:

The following items are provided for your information and reference.

- A. All submitted information not marked "CONFIDENTIAL INFORMATION" will be available for public inspection upon request. (Note: If a submittal is to be held confidential, each page must be so marked.)
- B. Spills, accidents, fires, injuries, blowout and other undesirable events, as described in NTL MSO-1-92, must be reported to this office within the timeframes in NTL MSO-1-92. Furthermore, all spills (saltwater or oil) or pipeline breaks outside the diked area shall be reported within 24 hours to the Surface Management Agency.
- C. North Dakota State Law number 43-02-03-53 does not allow the use of surface pits for water disposal.
- D. Under Environmental Obligations (43 3162.5-1), Disposition of Production (43 CFR 3162.7-1) and Disposal of Produced Water (Onshore Order No. 7):

You are required to take all necessary steps to prevent any death of a migratory bird in pits or open vessels associated with the drilling, testing, completion, or production of this well. The death of any migratory bird found in such a pit or open vessel is a violation of the Migratory Bird Treaty Act and is considered a criminal act. Any deaths of migratory birds attributable to pits or open vessels associated with drilling, testing, completing, or production operations must be reported to this office and the United States Fish and Wildlife Service within 24 hours.

VI. PALEONTOLOGICAL/CULTURAL

Any cultural or paleontological resource discovered by an Operator or any person working on his/her behalf will be reported immediately to the BLM, and all operations that may further disturb such resources will be suspended until written authorization to proceed is issued by the BLM Authorizing Officer. An evaluation of the discovery will be made by the BLM to determine appropriate actions to prevent the loss of significant resources.

APPENDIX 1

Map 1: Location of Irish Well Pad and Access Roads from Nearest Town/Landmark

Map 2: One Mile Radius Development Map of the Irish Well Pad

Figure 1: Well Pad Layout -Irish Well Pad

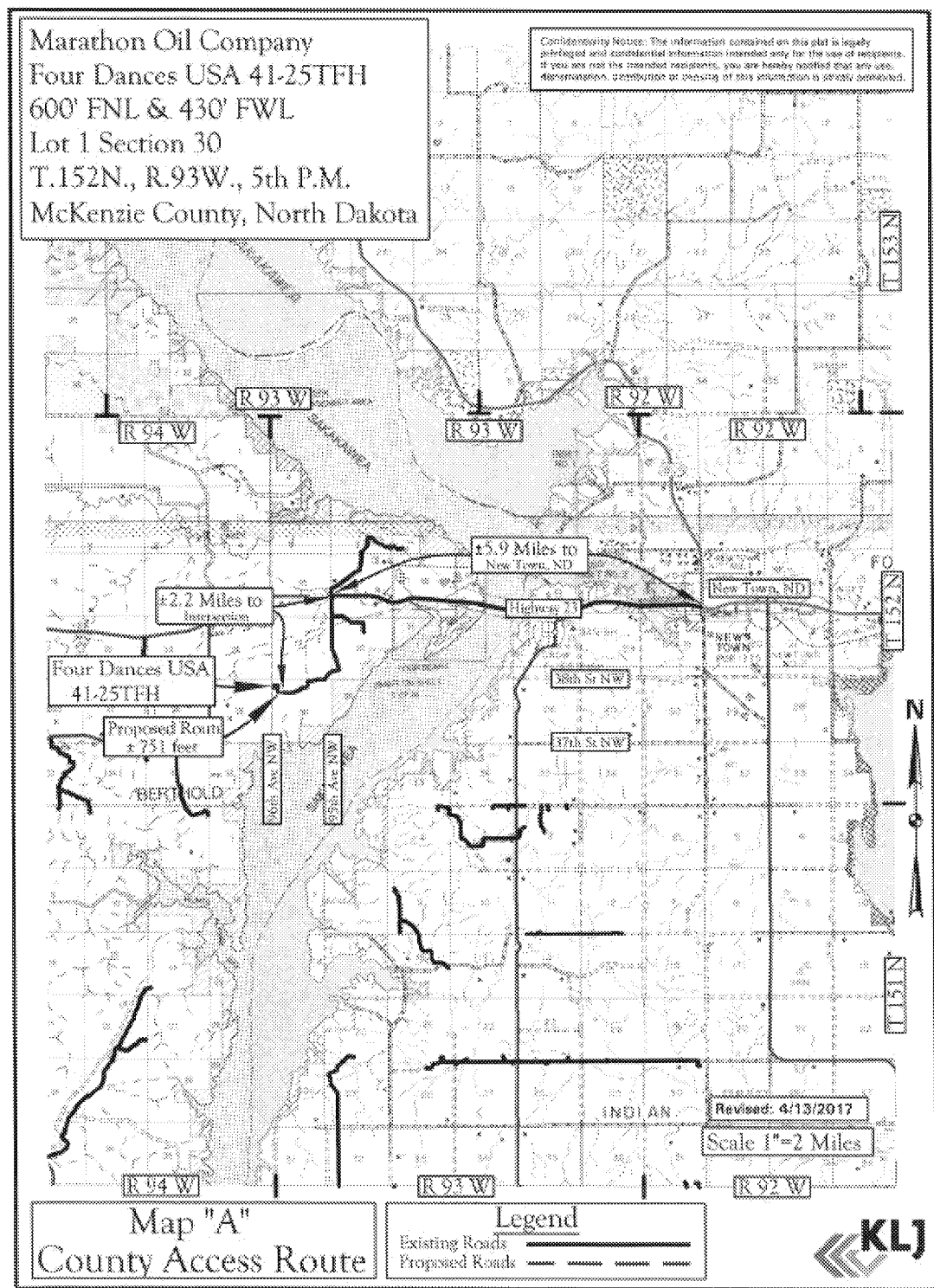
Figure 2: Original Contours: Irish Well Pad Cut & Fill

Map 3: Location of Waltom Well Pad and Access Roads from Nearest Town/Landmark

Map 4: One Mile Radius Development Map of the Waltom Well Pad

Figure 3: Well Pad Layout –Waltom Well Pad Expansion and Infill Wells

Map 1: Location of Well Pad and Access Roads- Proposed Irish Well Pad for the Four Dances USA 41-25TFH, Gretchen USA 11-30TFH-2B, Irish USA 41-25TFH, Sheldon USA 11-30TFH, and Snowman USA 41-25H in McKenzie County, ND.



Map 2: One Mile Radius Development Map of the Proposed Irish Well Pad for the Four Dances USA 41-25TFH, Gretchen USA 11-30TFH-2B, Irish USA 41-25TFH, Sheldon USA 11-30TFH, and Snowman USA 41-25H in McKenzie County, ND.

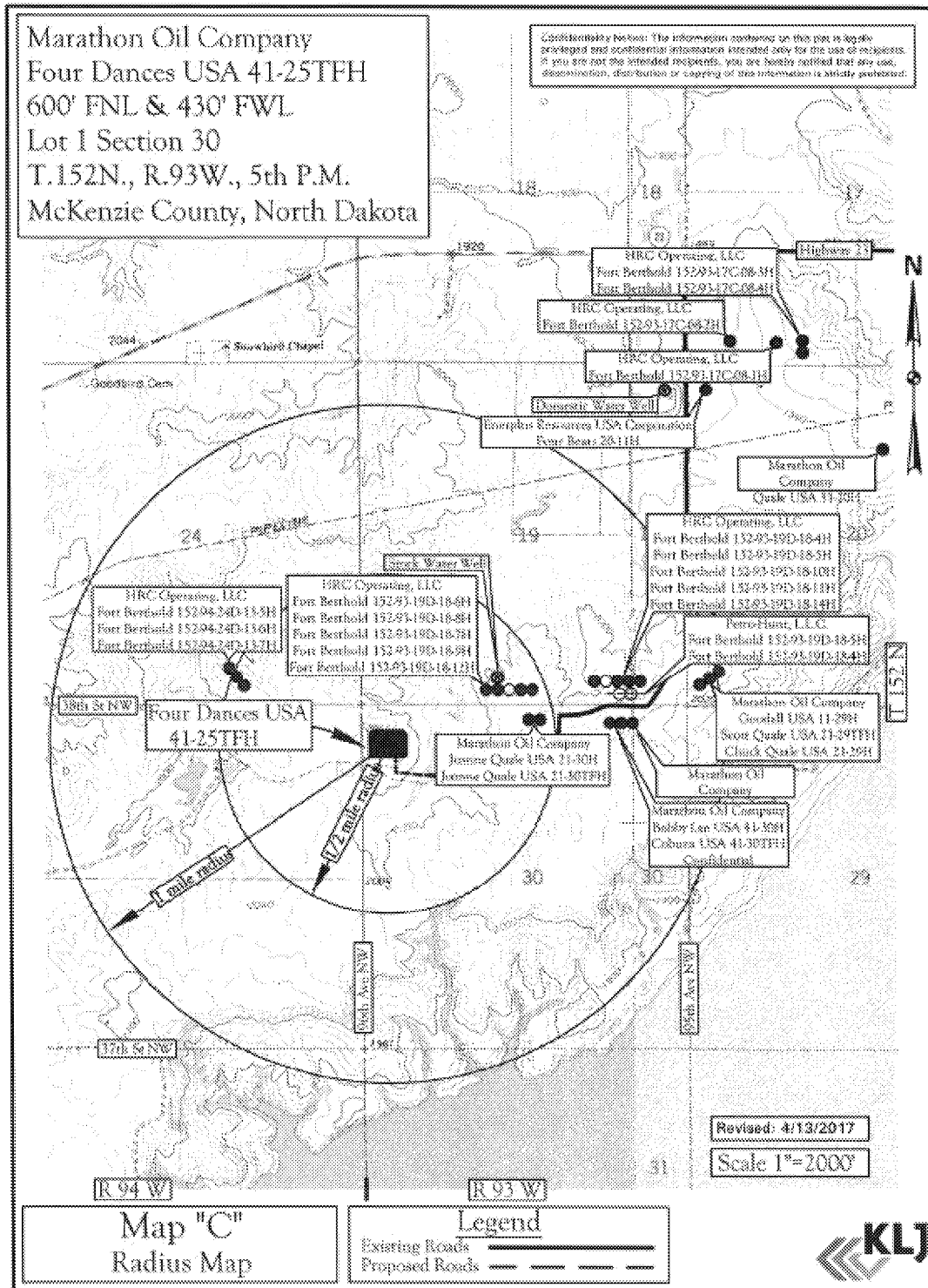
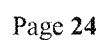


Figure 2: Original Contours Diagram-Well Pad Cut & Fill - Proposed Four Dances USA 41-25TFH,



Four Dances USA 41-25TFH
Original Ground

I, Eric Meador, Professional Land Surveyor, N.D. No. 9654, do hereby certify that the survey plat shown herein was made by me, or under my direction, from notes made in the field, and the same is true and correct to the best of my knowledge and belief.

ERIC L. MEADOR
REGISTERED PROFESSIONAL LAND SURVEYOR
N.D. 9654
DATE 4-18-17
NORTH DAKOTA

Well Photo Series	Elevation	C.P.
A	2031.56	4-1-25TFH
B	2031.56	4-1-25TFH
C	2031.56	4-1-25TFH
D	2031.56	4-1-25TFH
E	2031.56	4-1-25TFH
F	2031.56	4-1-25TFH
G	2031.56	4-1-25TFH
H	2031.56	4-1-25TFH
I	2031.56	4-1-25TFH
J	2031.56	4-1-25TFH
K	2031.56	4-1-25TFH
L	2031.56	4-1-25TFH
M	2031.56	4-1-25TFH

Section Line

33' Section Line Easement

Lot 1, Section 30
T.152N., R.93W., 5th P.M.

Existing Barbed Wire Fence

Existing 2" Thick Timber

Confidentiality Notice: The information contained on this plat is legally privileged and confidential information intended only for the use of recipients. If you are not the intended recipient, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

Drawn By	Surveyed By	Approved By	Scale	Date
B.P./A.S./B.C.	J. Semerad	E. Meador	1" = 100'	3/14/2014

Field Book	Material	Revised	Project No.	Drawing No.
OW-294	Original Ground	4/13/2017	3715223.1	7

KL

Map 4: One Mile Radius Development Map of the Waltom Well Pad

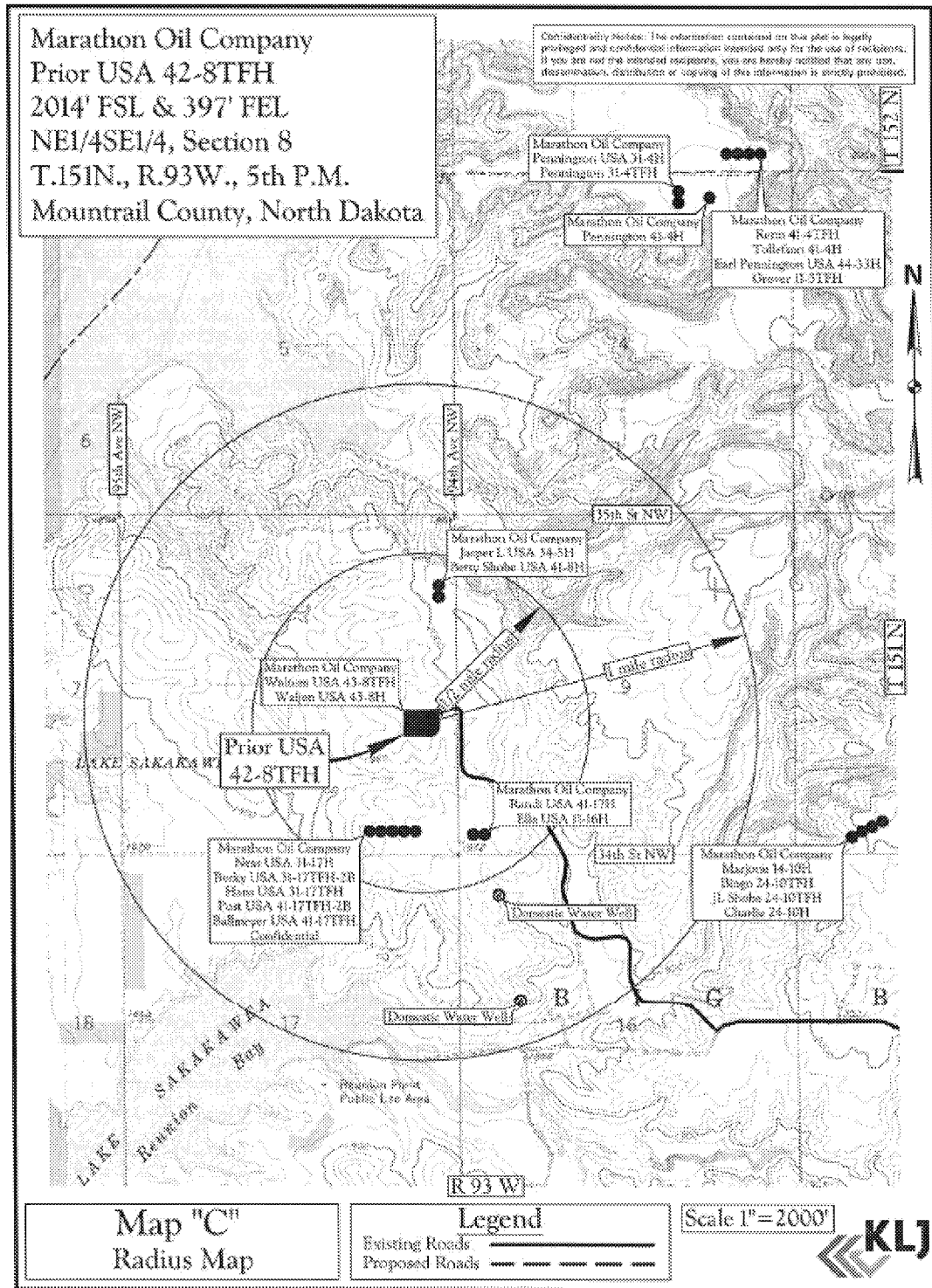
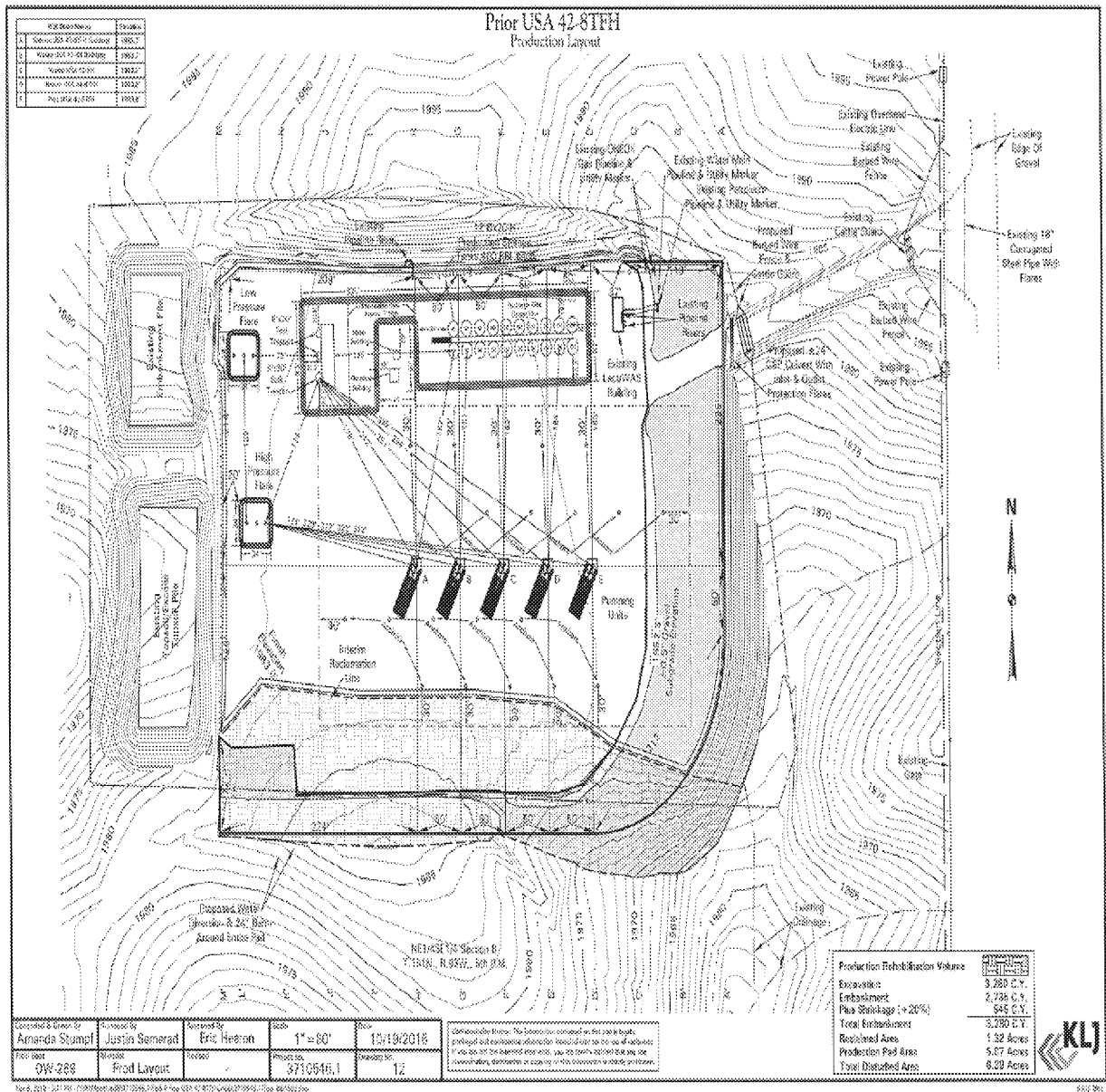


Figure 3: Well Pad Layout –Waltom Well Pad Expansion and Infill Wells



**U.S. Department of the Interior
Bureau of Land Management**

Environmental Assessment DOI-BLM-MT-C030-2016-0185-EA

March 2016

**Marathon Oil Company
Proposed Oil Wells**

**Brandt USA 44-34TFH
Loftquist USA 34-34H**

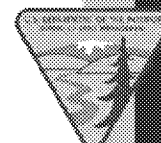
Mountrail County, ND

Location: *SESW Section 34, Township 152 North, Range 93 West*

Lease: *14-20-A04-9062*

Applicant/Address: *Marathon Oil Company
3172 HWY 22 N
Dickinson, ND 58601*

U.S. Department of the Interior
Bureau of Land Management
North Dakota Field Office
99 23rd Avenue West, Suite A
Dickinson, ND 58601
Phone: 701-227-7700
Fax: 701-227-7701



CHAPTER 1 INTRODUCTION

INTRODUCTION

This Environmental Assessment (EA) has been prepared by the Bureau of Land Management North Dakota Field Office to analyze Marathon Oil Company's (Marathon) Applications for Permit to Drill (APDs), including existing road, well pad, and associated infrastructure. The surface is privately owned within the (exterior) boundary of the Fort Berthold Indian Reservation (FBIR). Mineral ownership directly below the proposed well locations is privately held (fee). The horizontal portion of the well bore would penetrate Indian mineral (14-20-A04-9062). The well information is as follows:

<u>Well Identification</u>	<u>Legal Location</u>	<u>Lease Number</u>
Brandt USA 44-34TFH	SESW, Sec. 34, T152N R93W	14-20-A04-9062
Loftquist USA 34-34TFH	SESW, Sec. 34, T152N R93W	14-20-A04-9062

The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions.

BACKGROUND

The two proposed oil and gas wells would be drilled from the existing Weninger well pad and would be drilled into Indian lease 14-20-A04-9062. The description of the operator Proposed Actions and analysis contained in the EA depicts the proposed wells and the environmental effects available to the BLM at the time of this analysis.

The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions.

CONFORMANCE WITH LAND USE PLAN

For the Indian lease, the Proposed Action is in conformance with and this EA incorporates by reference the BIA Regulations at 25 CFR Part 211.4 and 225.4 to the Secretary's regulations. The BIA, BLM and ONNR, as the Secretary of the interiors representatives, have an obligation to act as a trustee for Indian tribes and allottees for Indian mineral resources.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The BLM decision to be made is whether or not to approve the APDs. The purpose of the action is to allow the lessee to develop the Indian trust mineral lease indicated above in an environmentally sound manner. The need for the action is established by BLM Onshore Orders (43 CFR 3160), which require the BLM to review and approve APDs on Indian trust leases, including those leases with split estate lands. However, the BLM has no jurisdiction over surface

impacts on these split estate lands, but can offer similar resource protection measures as done on federal surface lands.

SCOPING AND PUBLIC INVOLVMENT AND ISSUES

The operator has provided certification that they have surface owner's agreements, which were received by the BLM on 2/18/2016. No issues were identified by the surface owners. The projects were posted at the North Dakota Field Office on 3/25/2016. The EA analyzes the Proposed Action and discloses potential impacts based upon existing data.

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

DESCRIPTION OF PROPOSED ACTION

Marathon Oil Company (MOC) proposes to utilize the existing access road and expand the existing Weninger well pad by 0.65 acres to drill the following two infill oil wells: Brandt USA 44-34TFH, and Loftquist USA 34-34TFH in Mountrail County, ND. Refer to the legal location listed in the Introduction above. The infill wells would be drilled vertically to the Bakken formation and then horizontally in the formation. After the wells are drilled, they would be tested and if commercial quantities of oil or gas are discovered, the wells would be completed for production and piped to production facilities that would be installed on location. Drilling is expected to begin as soon as all necessary permits have been obtained. The drilling operations are expected to take approximately 30 days and the completion operations are expected to take 20 days. The wells would be drilled and completed in full compliance with all applicable laws, regulation (43 CFR 3100), *Onshore Oil and Gas Orders*, the Application for Permit to Drill (APD), and any Conditions of Approval.

Table 1: Summary of the Maximum Proposed Site Dimensions & Disturbance

<i>Well Name(s)</i>	<i>Legal Location</i>	<i>Well Pad</i>	<i>Access Road</i>	<i>Total</i>
Brandt USA 44-34TFH Loftquist USA 34-34TFH	SESW, Sec. 34, T152N, R93W (SHL) Sec. 27 and 26 T152N, R93W (BHL)	Existing Expansion acreage is 0.65	existing	0.65 acres

Well Site Construction

MOC proposes to drill the following two oil wells: Brandt USA 44-34TFH, and Loftquist USA 34-34TFH on an existing well pad in Mountrail County, ND. The total new surface disturbance from the construction of the well pad expansion is listed in the table above. Surface and subsoil materials in the immediate project area would be used for construction of the pad expansion. Scoria and gravel would be used to surface the well pad expansion and would be acquired off site from a commercial source. After the wells are drilled, they would be tested and if commercial quantities of oil or gas are discovered, the wells would be completed for production and production facilities would be installed on the well pad.

Well Site Drilling

The drilling operations would start upon receipt of an approved applications for permit to drill, and would take approximately 30 days after spudding, followed by additional time for well completion and installation of production facilities. The proposed wells would be vertically drilled with a closed loop system into the Bakken Formation to an approximate depth of 9,500 feet and then drilled horizontally. Surface casing (9 5/8") would be set at approximately 2,000 feet and cemented back to the surface. The wells would then be drilled below the casing. The operator does not anticipate Hydrogen Sulfide gas to be encountered but has submitted an H₂S Contingency Plan for the wells. An appropriately sized Blowout Preventer (BOP) would be used to control the well and prevent an accidental release of hydrocarbons or salt water into the environment.

Fresh water based mud system would be used while drilling down to surface casing setting depth, and an invert mud system (oil based) would be used for drilling the remaining vertical section and the horizontal section of the wells would use a brine drilling fluid. The wells would be fracture stimulated and completed for production if economically recoverable quantities of oil are found.

No water wells would be drilled on location. Fresh water would be hauled from a commercial source along Highway 23 to the location.

At the drilling location, drilling cuttings would be hauled off location and disposed of at an approved Disposal Center. Disposal of all solids and liquids (drilling fluids/cuttings, produced water, trash, sewage and chemicals) will meet all state, federal and county requirements. Produced fluids would be placed in test tanks on location. An impermeable berm would be constructed around the test tanks to serve as secondary containment.

The wells would be drilled and completed in full compliance with all applicable laws, regulation (43 CFR 3100), *Onshore Oil and Gas Orders*, the Application for Permit to Drill (APD), and any Conditions of Approval.

Well Site Completion

Bakken wells typically undergo fracture stimulation as part of the well completion process. Fracture stimulation (i.e., hydraulic fracturing or "fracing") is a process used to maximize the extraction of underground resources by allowing oil or natural gas to move more freely from the rock pores to production wells that brings the oil or gas to the surface. The hydraulically created fracture acts as a conduit in the rock formation, allowing oil or gas to flow more freely through the fracture system, and to the wellbore where the oil or gas is produced to the surface.

To create or enlarge fractures, fluid comprised typically of water and additives is pumped into the productive formation at a gradually increasing rate and pressure. Hydraulic fracturing fluid is approximately 98 percent water and propping agents (proppant), such as sands with the remainder being chemical additives. Chemicals used in stimulation fluids include acids, friction reducers, surfactants, potassium chloride (KCl), gelling agents, scale inhibitors, corrosion inhibitors, antibacterial agents, and pH adjusting agents and typically comprise less than 2% of

the total fluid. When the pressure exceeds the rock strength, the fluids create or enlarge fractures that can extend several hundred feet away from the well. As the fractures are created, a propping agent (usually sand) is pumped into the fractures to keep them from closing when the pressure is released. After fracturing is completed, the majority of the injected fracturing fluids returns to the wellbore and is reused or disposed of at an approved disposal facility.

A typical fracture stimulation technique involves 20-30 stages which partition the wellbore into segments which are each separately fracture stimulated. This allows for more efficient use of frac fluid and proppant and a more evenly distributed treatment of the full length of the wellbore. This multi-stage hydraulic fracturing has allowed development of the Bakken formation that was previously uneconomic due to low permeability.

Well Site Production

Production facilities required to operate each oil well include a pumping unit, oil and saltwater tanks, a flare stack and a heater treater would be located on the well pad and produced oil would be transported to the production tanks via flowlines, buried to a depth of four feet within the access road ROW. Recycle pumps, metering equipment, small sheds or enclosures and other miscellaneous equipment would also be installed on the leveled working area of the well pad. Production facilities would be spaced according to minimum safe operating distances. All surface facilities would be painted a flat earth-tone color except facilities requiring high-visibility colors for safety. A dike would be constructed completely around the production facilities designed to hold fluids. These dikes would be constructed of compacted subsoil, are impervious, and hold 100% capacity of the largest vessel plus one day production volume.

During the production phase, the operator would reduce the pads size to accommodate only the area that is needed for production. All slopes would be re-contoured to gentler grades, stabilized; topsoil spread, grass seeded and drainage would be established. Upon well abandonment, the operator would reclaim the well pad and access road as directed by the surface owner or by the BLM AO if reclamation is inadequate.

NO ACTION ALTERNATIVE

Under the No Action Alternative, the well and associated facilities would not be permitted. The lease allows drilling to occur in the lease areas subject to the stipulations of the specific lease agreement. BLM can deny the APDs, if the proposal would violate lease stipulations, applicable laws and or regulations, and also can impose restrictions to prevent undue or unnecessary environmental degradation.

CHAPTER 3 AFFECTED ENVIRONMENT

Mandatory Item	Present and Affected	Present Not Affected	Not Present
Threatened and Endangered Species		X	
Floodplains			X
Wilderness Values			X

ACECs			X
Water Resources		X	
Air Quality		X	
Cultural or Historical Values			X
Prime or Unique Farmlands			X
Wild & Scenic Rivers			X
Wetland/Riparian			X
Native American Religious Concerns			X
Wastes, Hazardous or Solids			X
Invasive, Nonnative Species		X	
Environmental Justice		X	

The following non-critical resources would not be impacted by this proposed action; therefore, they would not be analyzed in detail by this Environmental Assessment: Fire, Forestry, Geology, Lands/Realty, Recreation, Wetlands, Livestock Grazing, or Ecologically Critical Areas.

Air Quality: The proposed well sites and access roads are located in a Class II air quality rating area, which is an area that allows moderate degradation above “baseline” including most of the United States. The air will contain some pollution from the oil and gas activities in the oil field within a few miles radius of the wells, including very little hydrogen sulfide gas, some sulfur dioxide gas from venting and flaring activities, and dust particulates from surface-disturbing activities. The nearest Class I air shed is the northeastern portion of the North Unit of Theodore Roosevelt National Park, which is approximately 37 miles southwest of the project area. The dominate wind direction in this area is from the west.

Cultural Resources: A Class III cultural resources inventory (BLM # 15-MT030-313) was conducted and no significant cultural resource sites were located in the project area or area of potential affect (APE).

Hydrology: The proposed well sites and access roads are located in the watershed of the Missouri River. The proposed well sites and access roads are located south of New Town, ND approximately 1.0 miles east of the main body of Lake Sakakawea.

Soils: The proposed wells are located in SESW of Section 34, T152N, R93W. Soil affected by this action were identified from the U.S. Department of Agriculture, Natural Resources Conservation Service Soil Survey Geographic (SSURGO) database for Mountrail County, North Dakota. For the Official Series Description visit:
<http://soils.usda.gov/technical/classification/osd/index.html>.

Soils in the area of the Proposed Actions are mostly Williams- Zahl loams (C132B which occur on till plains and uplands). These soils are well drained and on slopes of 3 to 6 percent where flooding is non-existent, however available water capacity is high. The ecological site is thin Loamy. These soils are found at elevations of 1,600 to 2,500 feet, in areas with mean annual precipitation of 14 to 17 inches and a mean annual air temperature of 37 to 45 degrees F. The landforms are rises where the depth to restrictive feature is more than 80 inches.

Vegetation: The vegetation type is cultivated crops within the Northwestern Great Plains Mixed grass Prairie, an ecosystem that occurs continuously for hundreds of square miles, interrupted by drainages, wetland/riparian areas or sand prairies. Vegetation generally consists of annual graminoids and forbs, as well as perennial graminoids such as little bluestem, western

wheatgrass, needle-and-thread, prairie sandreed, bluebunch wheatgrass, green needlegrass, plains muhly, as well as forbs and shrubs. The area is suited and used mainly for farming and pasture. The project areas lie within an agricultural field and amongst existing developed oil & gas pads.

Visual Resources: This region has low rolling hills and fields covered with prairie vegetation on slopes, and brushes in the draws, or are cultivated croplands. The view shed is consistent with the VRM Class IV Objectives. The objective of this class is to allow for major modifications to the landscape. The level of change to the characteristic landscape should be high.

Wildlife: The majority of Mountrail County lies within the Missouri Slope or Missouri Coteau Region of North Dakota and has been largely influenced by glaciation. This heavily glaciated region contains a considerable variety of glacial land forms mostly characterized by knob-and-kettle topography, and innumerable shallow basin wetlands occur throughout. This region is generally represented by western mixed grass prairie and is typically grazed if it has not been converted by cultivation. Prior agricultural conversion areas generally result in cultivation for wheat. In general, wildlife species that may be found utilizing the project area include White-tailed deer, limited pronghorn & mule deer, sharp-tailed grouse and numerous migratory birds including – Western Meadowlark, Lark Bunting, Grasshopper Sparrow, Chestnut-collared Longspur, Golden Eagle, Rough legged Hawk and Swainson's Hawk. The project area does lie within the migratory path of the Endangered Whooping Crane.

CHAPTER 4 ENVIRONMENTAL EFFECTS

PROPOSED ACTION DIRECT AND INDIRECT EFFECTS

Air Quality: Ambient Air Quality Standards (AAQS) may be exceeded for a short time during the pad construction, drilling, and completion phases. This would take approximately 60 days. Hydrogen sulfide gas (H_2S) may be encountered in the drilling and production phase. The burning or flaring of H_2S results in the release of sulfur dioxide (SO_2). If H_2S or SO_2 were released into the atmosphere AAQS may be exceeded for a short time. There may be a period of increased dust during the pad construction phase.

Impacts from SO_2 and H_2S are addressed in the Williston Basin Regional Air Quality Study. This study shows that ambient air quality and PSD Class II air quality are relatively good in the Williston Basin. An operator has the option to flare produced gas for a 30-day period. After that period, the well must be connected to a gas line or the operator must request permanent flaring. The requirement that all produced gas be either captured or flared should mitigate the impacts to air quality due to production operations or well testing. This flaring could be used to mitigate or lessen any impacts that may temporarily exceed local ambient air quality.

Cultural: A Class III cultural resources inventory (BLM # 15-MT030-313) was conducted and no significant cultural resource sites were located in the project area or APE. A copy of the Class III Cultural Resources Inventory, with a formal letter detailing the report's findings, was sent to the Mandan, Hidatsa, and Arikara Nation (MHAN) Tribal Historic Preservation Officer (THPO)

on March 9, 2016. To this date the BLM had received no response from the MHAN THPO concerning the project location or the cultural resources survey report. The BLM gives a finding of “No Historic Properties Affected” if the proposed project proceeds as currently planned. If any cultural resources are uncovered during project construction then all work must stop immediately, and the BLM archaeologist must be contacted.

Hydrology: Using a fresh water mud system and cementing the surface casing string from 2,000 feet back to the surface would protect shallow aquifers. Deeper aquifers and potentially productive hydrocarbon zones would be protected through the use of production casing, and cementing. The producing fractured zone depth is 9,000 to 11,000 feet in depth, well below the typical depth of usable ground water. Well bore construction isolates the Dakota and shallower formations with surface casing set below the base of the Dakota and cemented to surface. Production casing is set from the surface to the producing formation and is typically cemented to 4,000 to 5,000 feet above the producing formation. These factors combine to protect usable ground water from the fracking process. Approximately 20 to 30 stimulation stages (every 300 to 500 feet) would be needed for a typical horizontal well bore to fracture stimulate the formation. Each stage requires approximately 1400 barrels of fluid (an average of about 36,000 barrels per well). Stimulation fluid would be disposed of at an approved disposal facility or recycled for reuse or a combination of both.

Surface soils would be susceptible to wind and water erosion during well pad construction until placement of scoria or gravel. Surface soils would also be susceptible to wind and water erosion in recontoured areas until vegetation is re-established. Erosion from water may be reduced by installing matting, straw booms/wattles, and berms in the appropriate locations. Erosion rates will return to natural levels once vegetation is reestablished providing living and dead vegetation to protect the soil surface from wind and water. By installing runoff preventive measures and the presence of sediment filtering vegetation between the construction sites and live waters, effects to surface waters would be nearly negligible.

Soils: The construction of the proposed well pad expansion would disturb approximately 0.65 acres. Impacts to soils from the disturbance associated with the wells would be compaction from equipment and vehicle traffic and storage of topsoil and subsoil. Topsoil would be removed from the construction areas and saved for reclamation. The loss of vegetation over this area will also make the soils more susceptible to erosion by both wind and water. These impacts are anticipated to be of short duration and erosion rates will return to natural levels once vegetation is reestablished. During the production phase, the operator would reduce the production pad size to accommodate only the area that is needed for production. All slopes will be recontoured to gentler grades and stabilized and topsoil and drainage will be established. Upon well abandonment, the well pad, roads, and pipelines would be reclaimed in accordance with the surface owner’s direction, and the operator’s reclamation plan.

Vegetation: About 0.65 acres of vegetation would be removed for construction of the well pad associated with the drilling of the oil wells. This disturbance would present the opportunity for noxious weeds to become invasive and spread, which may be brought in by natural carriers and/or construction equipment. The operator would be responsible for weed control on disturbed areas and areas within the exterior limits of the well pads and access roads. Following construction, production, or abandonment operations, the disturbed areas would be reclaimed,

contoured, and seeded, to meet the BLM's requirements to reestablish a vegetation regime that is appropriate for the area. The reclamation measures would help ensure potential impacts from noxious weeds and invasive plants to be minimal. During the production phase, the operator would reduce the well pad size to accommodate only the area that is needed for production. All slopes would be re-contoured to gentler grades and stabilized and topsoil and drainage would be established. Upon well abandonment, the well pad and roads would be reclaimed in accordance with the surface owner's directions, and the operator's reclamation plan.

Wildlife: Approximately 6.0 acres of agricultural land were altered during construction of the Weninger Well Pad and an additional 0.65 acres will be disturbed by the proposed project. Construction, drilling, production and/or vehicle traffic would result in permanently or temporary displacement of some wildlife species including migratory bird species. Mortality of some relatively small, immobile species may occur as a result of construction. On a landscape basis, new roads and well pads would contribute to additional habitat fragmentation and dispersion of certain wildlife species. A loss of habitat for nesting, foraging, breeding, and cover for those species of wildlife associated with these habitat types would occur during the life of the wells, which may include migratory bird species. The proposed project site is not considered prime habitat for whooping crane feeding or roosting; however, the project is located in their migration corridor. Because of the lack of T & E species in the proposed area, there would be no known adverse effect to any known federally listed T & E wildlife species.

NO ACTION DIRECT AND INDIRECT EFFECTS

Under the No Action alternative, the BLM would not authorize any construction, drilling or production activities needed for the oil wells proposed to enter and produce from the Indian lease. Consequently, there would not be any additional impacts to the environment. However, there would be continuing impacts from existing disturbances from farming, ongoing reclamation, infrastructure construction and installation, and other related surface disturbing activities in the area.

Economics: Under this Alternative, if BLM does not approve the applications, portions of the Federal lease and Indian lease would not produce. No production from the Federal lease would result in the loss of additional oil being added to the market place, and loss of royalties to the Federal and State governments. An analysis of the oil production in the area indicates an average oil well would produce approximately 500,000 barrels of oil during the life of a well. By choosing this alternative we would be denying the opportunity to produce approximately 1,000,000 barrels for the nation.

CUMULATIVE EFFECTS

Development in the area was analyzed in this environmental assessment using a one-mile radius applied around the proposed wells to determine the potential cumulative impact upon the environment. Application of the one-mile radius indicates that there are 14 existing wells present.

The proposed infill wells, Brant USA 44-34TFH and Loftquist USA 34-34TFH, on a single well pad in Mountrail County, ND, are located in an area of both perennial and annual vegetation,

surrounded by agriculture and grasslands at a much broader scale. The proposed well site and surrounding area serves as wildlife habitat for a variety of species. The addition of the proposed wells and constructed access routes will impact individual wildlife species but will add negligible stress to the population level; however, the result of all past actions coupled with this action would increase the extent of stressors on the native fauna within the area.

Cumulative effects from implementing the Proposed Actions are anticipated for air quality for a period of less than five years. If flaring of casing head gas is required to produce these wells, there could be long term minor impacts to air for the life of the well (about 20 years). In addition, both short term (<5 years) and long term (>5 years) effects are expected for soils, range, vegetation, hydrology, and wildlife.

Water resources have been impacted by the cumulative effects of activities that occur, including agriculture, mineral exploration and development, and pollution. There would be continuing impacts from existing disturbances from oil wells, ongoing reclamation, pipeline installation, construction and other related surface disturbing activities in the area. As a result of the latter, existing activities, erosion, sedimentation, and run-off may persist to some degree. These impacts decrease watershed health and water quality.

Over the last 10 years, advances in multi-stage and multi-zone hydraulic fracturing has allowed development of oil and gas fields that previously were uneconomic. These drilling and fracturing completion techniques have resulted in a very large cumulative increase in oil and gas production from the Bakken and Three Forks formations in the Williston basin of North Dakota, Montana, and Canada.

Both existing and future energy development would continue to have direct and indirect habitat impacts. Existing development will continue to affect vegetation growth and seedling growth as a result of mechanical disturbance and possibly the introduction of invasive species into the area. Prairie habitat is increasingly being lost or fragmented in North Dakota. On a landscape scale, these small isolated areas of direct and indirect disturbance will further reduce connectivity of wildlife habitats. To prevent additional or limit habitat fragmentation, oil companies have proposed to install multiple wells at a single well pad location, accessed by one road. Commercial success at any new well might result in additional oil/gas exploration proposals. Cumulative impacts that are reasonably foreseen from existing and proposed activities include impacts from habitat fragmentation on a landscape scale and impacts from an improved economy for western North Dakota.

CHAPTER 5 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED

Table 2: Tribes, Individuals, Organizations, or Agencies Consulted		
<i>Name/Agency</i>	<i>Authority</i>	<i>Result</i>
The surface owners-Private.	BLM requires that the Operator engage the Surface Owner in negotiations for the purpose of obtaining a surface owner agreement or waiver for access.	Surface use agreements or certifications were received on 08/31/2015.

CHAPTER 6 LIST OF PREPARERS

**Table 3: List of
Preparers**

<i>Reviewer</i>	<i>Title</i>	<i>Assignment</i>	<i>Date/Initials</i>
Lori Ford	NRS	Minerals, Project Lead	LMF 3/25/2016
Paul Kelley	NRS	NEPA Review	PWK 4/17/16
Tim Zachmeier	Wildlife Biologist	Wildlife Resources	JPZ 3/31/16
Justin Peters	Archeologist	Cultural Resources	JWP 4/11/2016

Kathy Bockness
Environmental Coordinator

4/18/2016
Date

REFERENCES

U.S. Bureau of Land Management (BLM). 1988, as amended 2015. North Dakota Resource Management Plan and Record of Decision, North Dakota Field Office, Dickinson, North Dakota.

U.S. Department of Agriculture, Natural Resources Conservation Service Soil Survey Geographic (SSURGO) database for Mountrail County, North Dakota. For the Official Series Description visit: <http://soils.usda.gov/technical/classification/osd/index.html>

**United States Department of the Interior
Bureau of Land Management**

Environmental Assessment DOI-BLM-MT-C030-2016-0185-EA

Finding of No Significant Impact

**Marathon Oil Company
Proposed Oil Wells**

**Brant USA 44-34TFH
Loftquist USA 34-34TFH**

**Sec. 34, T 152N, R 93W
Mountrail County, ND**

**Marathon Oil Company's (Marathon) Applications for Permit to Drill (APDs), including
well pad, and associated infrastructure**

INTRODUCTION

Marathon Oil Company (MOC) proposes to drill the following two infill oil wells: Brandt USA 44-34TFH and Loftquist USA 34-34TFH in Mountrail County, ND. The well bores would penetrate into Indian lease 14-20-A04-9062. The description of the operator Proposed Action and analysis contained in the EA depicts the proposed wells and the environmental effects available to the BLM at the time of this analysis.

The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions.

PLAN CONFORMANCE AND CONSISTENCY:

The Proposed Action is in conformance with and this EA incorporates by reference the BIA Regulations at 25 CFR Part 211.4 and 225.4 to the Secretary's regulations. The BIA, BLM and ONNR, as the Secretary of the interiors representatives, have an obligation to act as a trustee for Indian tribes and allottees for Indian mineral resources.

FINDING OF NO SIGNIFICANT IMPACT DETERMINATION:

Based upon a review of the EA and the supporting documents, I have determined that the project is not a major action significantly affecting the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity, as defined in 40 CFR 1508.27, and do not exceed those

effects described in the North Dakota Resource Management Plan, which was approved on April 22, 1988, as amended September 21, 2015. The Proposed Action is in conformance with and this EA incorporates by reference the BIA Regulations at 25 CFR Part 211.4 and 225.4 to the Secretary's regulations. The BIA, BLM and ONNR, as the Secretary of the interiors representatives, have an obligation to act as a trustee for Indian tribes and allottees for Indian mineral resources; therefore, an environmental impact statement is not needed. This finding is based on the context and intensity of the projects as described:

Context: These projects are site-specific actions directly involving a total of approximately 0.65 acres of new disturbance in Mountrail County, North Dakota, which by itself does not have international, national, regional, or state-wide importance. The project areas include producing oil and gas wells.

Intensity: The following discussion is organized around the Ten Significance Criteria described in 40 CFR 1508.27 and incorporated into resources and issues considered (includes supplemental authorities Appendix 1 H-1790-1) and supplemental Instruction Memorandum, Acts, regulations and Executive Orders. The following have been considered in evaluating intensity for these proposals:

1. Impacts that may be both beneficial and adverse. The Proposed Actions would impact resources as described in the EA. Mitigation measures to minimize or eliminate adverse impacts were identified in the analysis and will be included as Conditions of Approval with the approved permits. The EA also disclosed beneficial impacts from the proposed project, such as the potential to bring additional oil and gas into the market place and provide revenues to the Indian mineral owners, and to obtain scientific data of the local geology, and to increase the knowledge base of the mineral resources potential.

2. The degree to which the proposed action affects public health and safety. No aspect of the Proposed Actions would have an effect on public health and safety. The selected alternative minimizes adverse impacts to public health and safety by project design and additional mitigation measures. No residences are located within a ¼ mile radius of the wells. Implementation of H₂S Safety Measures will be required if H₂S is encountered in excess of 100 ppm in the gas stream, the operator shall immediately ensure control of the well, suspend drilling ahead operations (unless detrimental to well control), and obtain materials and safety equipment to bring the operations into compliance with applicable provisions of Onshore Order No. 6.

3. Unique characteristics of the geographic area such as proximity of historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. The location of the proposed wells and access roads has been subject to a cultural resource inventory. The historic and cultural resources of the area have been reviewed by an archeologist and there would be no potential impacts to cultural resources in the design of the proposed action. There are no effects on park lands, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial. No unique or appreciable scientific controversy has been identified regarding the effects of the Proposed Actions. The environmental analysis did not show any highly controversial effects to the quality of the human environment.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks. The analysis did not show any unique or unknown risks to the human environment. The project is not unique or unusual because BLM and the State of North Dakota have approved similar actions in the same geographic area. The environmental effects to the human environment are analyzed in the environmental assessment. There are no known predicted effects on the human environment that are considered to be highly uncertain or involve unique or unknown risks.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. The actions considered in the preferred alternative were considered by BLM within the context of past, present, and reasonably foreseeable future actions. The actions would not establish a precedent, since the project area is in a developed oil and gas field.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. The environmental assessment evaluated the possible actions in context of past, present and reasonably foreseeable actions. The analysis did not disclose any significant cumulative impacts. A disclosure of the effects of the project is contained in the environmental assessment.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources. The projects will not affect districts, sites, highways, structures, or other objects listed on or eligible for listing in the National Register of Historic Places, nor would it cause loss or destruction of significant scientific, cultural, or historical resources. Identified cultural resources would be avoided by both well and associated infrastructure and would not be impacted by implementing the mitigation measures listed in the conditions of approval for the project.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973. There are no threatened or endangered species or habitat in the area of the Proposed Actions. There are no threatened or endangered plant species or habitat in the project areas.

10. Whether the action threatens a violation of Federal, State, Tribal or Local law or requirements imposed for the protection of the environment. The Proposed Actions do not threaten to violate any Federal, State, Tribal, or local law or requirement imposed for the protection of the environment. Furthermore, the project is consistent with applicable land management plans, policies, and programs.

/s/ Loren C. Wickstrom
Loren C. Wickstrom
Field Manager

8/10/2016
Date of signature

DECISION RECORD

DOI-BLM-MT-C030-2016-0185-EA

Marathon Oil Company Proposed Oil Wells

Brandt USA 44-34TFH
Loftquist USA 34-34H

Sec 34, T152N, R93W
Mountrail County, ND

Decision: It is my decision to authorize Marathon Oil Company (Marathon) proposed oil and gas wells on fee surface overlying fee minerals within the exterior boundary of the Fort Berthold Indian Reservation as described in the Proposed Actions of DOI-BLM-MT-C030-2016-0185-EA.

<u>Well Identification</u>	<u>Legal Location</u>	<u>Lease Number</u>
Brandt USA 44-34TFH	SESW, Sec. 34, T152N R93W	14-20-A04-9062
Loftquist USA 34-34TFH	SESW, Sec. 34, T152N R93W	14-20-A04-9062

Table 1: Summary of the Selected Alternative: This decision includes the following components:

<i>Well Name(s)</i>	<i>Legal Location</i>	<i>Well Pad</i>	<i>Access Road</i>	<i>Total</i>
Brandt USA 44-34TFH Loftquist USA 34-34TFH	SESW, Sec. 34, T152N, R93W (SHL) Sec. 27 and 26 T152N, R93W (BHL)	Existing Expansion acreage is 0.65	existing	0.65 acres

Alternatives: In addition to the selected alternative, the EA considered the “No Action” Alternative, which would carry out no management activities at this time.

Rationale for the Decision: The proposed well and related facilities meet the BLM’s purpose and need to allow the lessee to develop the subject mineral lease indicated above in an environmentally sound manner. The need for the action is established by BLM Onshore Orders (43 CFR 3160) which require BLM approval of APDs on a Federal or Indian trust lease, including those leases with split estate.

The operator has provided certification that they have a surface owner’s agreements, which were received by the BLM on 2/18/2016. No issues were identified by the surface owner.

The above factors and the analysis contained in DOI-BLM-MT-C030-2016-0185-EA for MOC’s proposed wells were carefully considered and evaluated. In addition, the APDs and surface owner agreement were reviewed. All reports were read and the information contained weighed in determining the appropriateness of the decision stated above.

/s/Loren C. Wickstrom
Loren C. Wickstrom
Field Manager

8/10/2016
Date of signature

Appeals:

Under BLM regulation this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of the decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, 5001 Southgate Drive, Billings, Montana 59101 within 20 business days of the date the decision is received, or considered to have been received.

Any party who is adversely affected by the State Director's decision may appeal that decision to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

ATTACHMENT 1

BUREAU OF LAND MANAGEMENT / NORTH DAKOTA FIELD OFFICE MT032

NOTICE SURFACE CONDITIONS OF APPROVAL FOR APD

CONDITIONS OF APPROVAL:

LEASE: 1420A049062
WELLS: Brandt USA 44-34TFH
Loftquist USA 34-34TFH
SESW section 34, T151N, R93W
Mountrail County, ND

I. CONSTRUCTION AND DRILLING OPERATIONS:

- A. A complete copy of the approved (APD), including conditions, stipulations, exhibits, and the H2S contingency plan (if required) must be on the well site and available for reference during the construction and drilling phases.
- B. Notification requirements:
 - 1. Verbally notify this office of the following actions:
 - a. At least 24 hours prior to beginning road and location construction.

BLM representatives can be reached Monday through Friday (8:00AM - 4:30PM) at the office telephone no. (701) 227-7700. The BLM personnel can be contacted after hours or on weekends for plugging approvals or any other approvals/change in plans which do not allow for communications during normal office hours by calling the following personnel.

	<u>Name</u>	<u>Home/Cell Telephone</u>
On Call 24 Hr. Cellular Phone	On-Call	701-290-8220 (c)
Supv Petroleum Engineer Tech.	Don Herauf	701-290-8217 (c)
Natural Resources Specialist	As Assigned	701-227-7700

II. GENERAL REQUIREMENTS

- 1. Notify the assigned BLM NRS at 701-227-7700 at least 24 hours prior to any construction and reclamation, reshaping the location or road and topsoil spreading.
- 2. During drilling, there shall be a 2' berm surrounding the invert tanks in the event of a spill.
- 3. A cuttings pit is not permitted for this location.
- 4. Best Management Practices including matting, tackifiers, straw mulch, and fiber rolls shall be used to aid in prevention of soil erosion. Fill slopes shall be covered in matting immediately. Topsoil shall also be covered in matting and seeded to prevent erosion and

maintain fertility.

5. Flares shall be fitted with a device to prevent oil from emitting into the air or off location.
6. Heater treater, incinerator and combustor exhaust stacks shall be fitted with an “exhaust cone” to prevent mortality to bats and nesting birds.
7. Production facilities must be located as close to well head as possible and placed in a manner that facilitates interim reclamation of the cut and fill slopes (3:1 slopes is optimal) of the well pad. Place production tanks on the "cut" portion of the pad, except where interim reclamation re-contouring would preclude that placement. All facilities shall comply with API RP 12 R1. Contact BLM, North Dakota Field Office for onsite meeting prior to facility placement.
8. If a tank battery is constructed on location, each tank setting, treater, and separator, must be surrounded on all sides by an impermeable dike of sufficient capacity to adequately contain 100% of the contents of the largest vessel within it, plus one (1) day's production.

Load lines must end inside the dike and have adequate drip containment catch basins.

9. The operator must immediately notify Tribal Historic Preservation Officer (THPO) and BLM if unexpected cultural resources are observed and may not destroy these resources. Disturbance of such discoveries is not allowed until the operator is directed to proceed by THPO or BLM.
10. All aboveground facilities shall be painted **Shale Green** within 6 months of well completion, unless approved otherwise by BLM.
11. Other waste, trash, and chemicals may not be disposed of or burned on location.
12. Saltwater or testing tanks must be located and/or diked so that any spilled fluids will be contained. Saltwater and diesel tanks may not be placed on soil stockpiles.
13. The operator is responsible for the prevention and suppression of fires on all lands, which are caused by their employees, contractors, or subcontractors.
14. The operator is responsible for weed control in the permitted area.
15. The operator will implement “Safety and Emergency Plan.” The operator’s safety director will ensure its compliance.
16. All open containers and/or catch basins which may contain any fluids shall be netted or screened to prevent unwanted wildlife entry. Including but not limited to recycle pump catch basins, secondary chemical containment structures.
17. The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 *et seq.*) prohibits the taking, killing, possession, and transportation (among other actions) of migratory birds, their eggs,

parts and nests, except when specifically permitted by regulations. You are required to take all necessary measures practical to avoid all “take” during construction, drilling, production and reclamation of this well. The USFWS recommends utilizing a qualified biologist, between February 1 and July 15, to survey the proposed location for nesting birds and to avoid any unnecessary take. If “take” is anticipated, contact the USFWS office in Bismarck, ND.

18. As per the USFWS Standard Conditions and Recommendations, work would cease if whooping crane sightings occur within one mile of the proposed project area. In coordination of the Service, work may resume when the crane(s) have left the area.
19. Under Environmental Obligations (43 3162.5-1), Disposition of Production (43 CFR 3162.7-1) and Disposal of Produced Water (Onshore Order No. 7):
 - a. You are required to take all necessary steps to prevent any death of a migratory bird in pits or open vessels associated with the drilling, testing, completion, or production of this well. The death of any migratory bird found in such a pit or open vessel is a violation of the Migratory Bird Treaty Act and is considered a criminal act. Any deaths of migratory birds attributable to pits or open vessels associated with construction, drilling, testing, completing, or production operations must be reported to this office and the United States Fish and Wildlife Service within 24 hours.
20. All containers that hold liquids need to have secondary containment in case of leakage. Including but not limited to, recycle pumps, chemical barrels....etc).

III. CONSTRUCTION REQUIREMENTS

1. The permittee is responsible for locating and protecting existing pipelines, power lines, and telephone lines.
2. The permittee shall protect all public land survey monuments, private property corners, and SMA boundary markers. In the event that any such land markers or monuments are destroyed in the exercise of the privileges authorized by this permit, depending on the type of monument destroyed, the permittee shall reestablish or reference the same in accordance with the following: (1) procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," (2) specifications of the county surveyor, or (3) the specifications of the SMA.
3. The road, borrow ditches, cuts, fills, cattle guards, and fences must be kept in a safe and usable manner and be maintained to original construction standards.
4. All vehicular traffic, personnel movement, construction/restoration operations should be confined to the area examined and approved, and to the existing roadways and/or evaluated access routes.

5. All operator employees and/or authorized personnel (sub-contractors) in the field shall have approved applicable APD's and ROW permits/authorizations on their person(s) during all phases of construction.
6. Install cattle guards and gates in all fences as needed.
7. Install culverts as needed.

IV. RECLAMATION REQUIREMENTS

1. A Sundry Notice, approved by the BLM, is required if interim reclamation will not take place within 6 months after well completion.
2. When plugging the well, a steel plate dry hole marker welded to surface casing at least 4 ft. below re-contoured ground is required, and must contain the same information as the well sign as directed by 43 CFR 3162.6 (30 CFR 221.22).
3. If the location and road are built but no well drilled, both must be reclaimed. Approved erosion controls shall be installed within 90 days after site construction if well drilling hasn't commenced.

If the well is a producer, or plugged and abandoned, all reclamation must be completed within 6 months after drilling or as set by BLM. Seeding must be done according to measure 6 (below) and should wait until the next seeding period, if a seeding period does not fall within the 6 month reclamation period.

When the well is completed, reclaim, re-contour cut and fill slopes, rip compacted subsoil, spread topsoil and reseed during the next spring or fall seeding period, the road ditches and the portion of the location not needed for production. A pre-work meeting with a BLM representative shall take place to develop an interim reclamation plan, is required.

Reclamation may be postponed by BLM during winter freeze-up.

When the well is plugged, the operator must contact BLM for development of the final reclamation plan and for approval of the reclamation work.

4. If the well is temporarily abandoned, location reclamation may be postponed for as long as the well is temporarily abandoned, but erosion and weeds must be controlled.
5. When the well is plugged and abandoned, remove the surfacing from the location and road and bury it at least 3 feet deep in the location, or reuse the material elsewhere. Re-contour the location, rip subsoil, spread topsoil, remove fences and reseed as required.
6. A native grass seed mix specified by the BLM, or a landowner's mix, must be utilized. Grass species need to be premixed prior to drilling and certified weed free seed is required. A native seed mix is provided below.
 1. Western Wheatgrass 2 lbs/acre

- | | |
|-----------------------|--------------|
| 2. Green Needle Grass | 6.5 lbs/acre |
| 3. Slender Wheatgrass | 2 lbs/acre |
| 4. Side oats Grama | 2.5 lbs/acre |

7. Seeding should take place during spring or fall.
Operator shall have 85% of the disturbed ground covered with vegetation. The vegetation will be the plants listed above, or the landowners seed mix, or natives. See the NRCS website for additional guidance of seeding:
http://efotg.sc.egov.usda.gov/references/public/ND/range_planting_550.pdf
8. All seeding rates will be based on pure live seed (PLS).
9. All seed must meet the requirements of North Dakota State Seed Laws and Regulations. Appropriate documentation must be provided to the BLM ND Field Office before seeding.

V. INFORMATIONAL NOTICE:

The following items are provided for your information and reference.

- A. All submitted information not marked "CONFIDENTIAL INFORMATION" will be available for public inspection upon request. (Note: If a submittal is to be held confidential, each page must be so marked.)
- B. Spills, accidents, fires, injuries, blowout and other undesirable events, as described in NTL MSO-1-92, must be reported to this office within the timeframes in NTL MSO-1-92. Furthermore, all spills (saltwater or oil) or pipeline breaks outside the diked area shall be reported within 24 hours to the Surface Management Agency.
- C. North Dakota State Law number 43-02-03-53 does not allow the use of surface pits for water disposal.

VI. PALEONTOLOGICAL/CULTURAL

Paleontological and archaeological field checks by BLM personnel or other authorized personnel will occur prior to disturbance as deemed appropriate by the BLM. A BLM approved archaeologist or paleontologist will conduct monitoring during surface disturbing activities. Paleontological or cultural resource sites will be avoided or mitigated as necessary prior to disturbance. Any cultural or paleontological resource discovered by an Operator or any person working on his/her behalf will be reported immediately to the BLM, and all operations that may further disturb such resources will be suspended until written authorization to proceed is issued by the BLM Authorizing Officer. An evaluation of the discovery will be made by the BLM to determine appropriate actions to prevent the loss of significant resources.